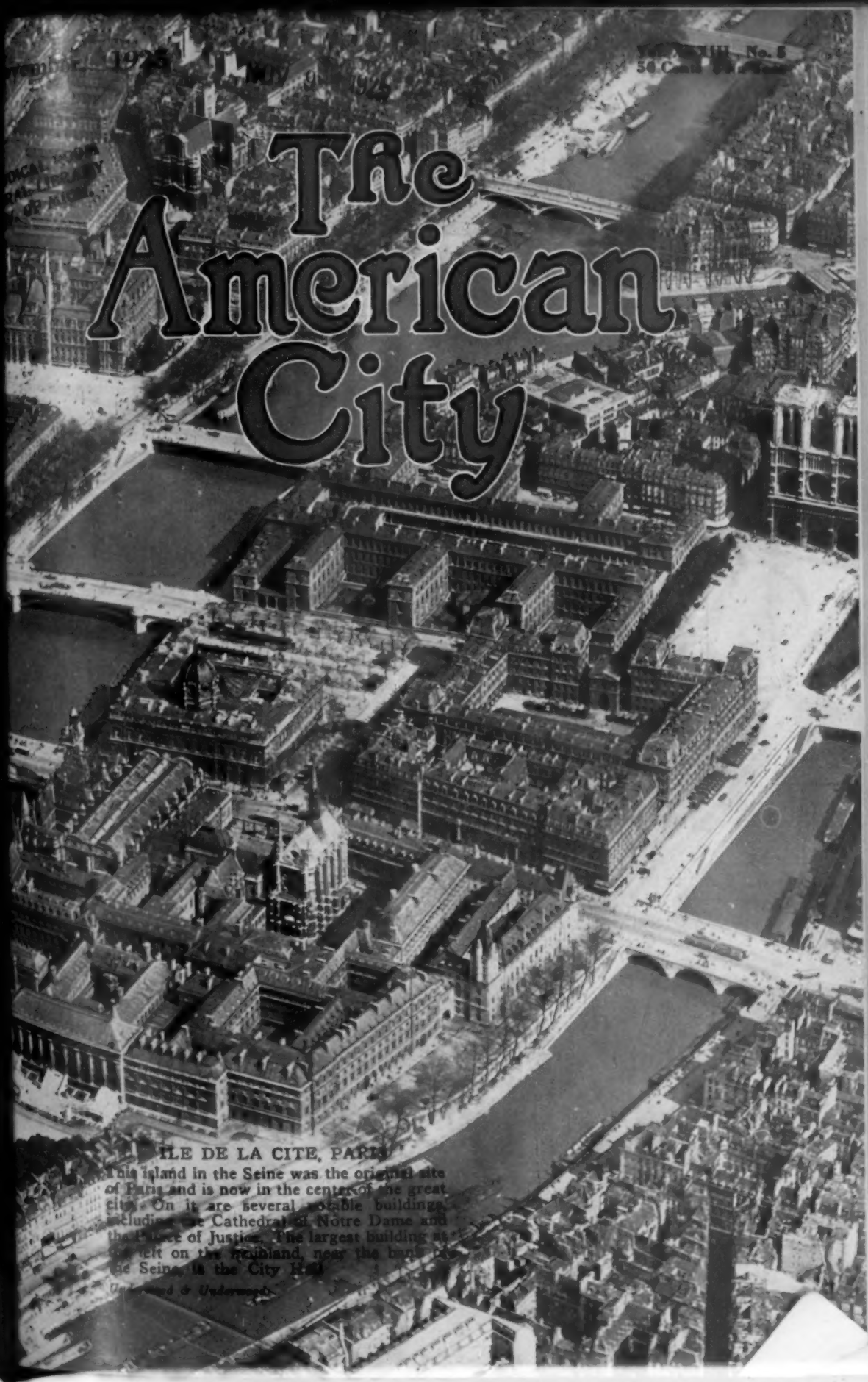
September 1925 [illegible] No. 5
50 Cents

The American City

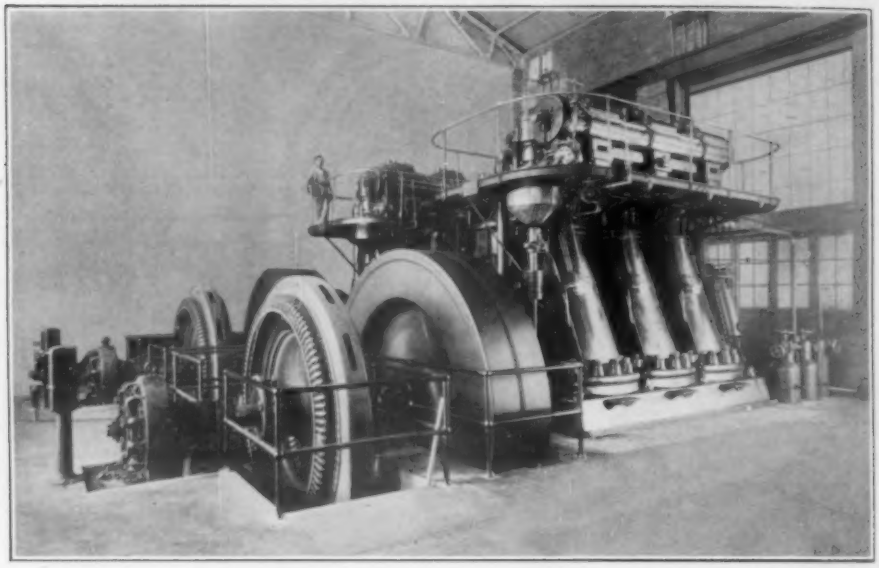


ILE DE LA CITE, PARIS

This island in the Seine was the original site of Paris and is now in the center of the great city. On it are several notable buildings, including the Cathedral of Notre Dame and the Palace of Justice. The largest building at the left on the mainland, near the bank of the Seine, is the City Hall.

Underwood & Underwood.

FULTON DIESEL



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	Unit No. 1	Unit No. 2
Time Factor	68.4	61.0
Yearly Load Factor	82.7	80.8
Station Factor	52.7	

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No. 5

The American City Magazine

NOVEMBER
1925

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Facts and Recommendations from a Health Survey of 86 Cities

THE smaller cities of the United States are beginning to recognize healthy children as a community asset. Evidence of this attitude is found in the many health-promoting activities already under way. There are, however, important things still left undone. The small city provides its children with good water to drink, but feeds them milk of doubtful quality. It surrounds them with regulations designed to curb communicable disease, but at the same time withholds much of the real protection that it is possible to provide. Its human bookkeeping records are faulty, and it fails adequately to teach the child and his parents how to be healthy. It does not equip the official health departments with people who are trained for the work and who are paid enough to give their entire time to the position, nor does it appropriate funds that are adequate for the serious duty of promoting the public health. The bright spot is that most communities realize their shortcomings, and some have already progressed very far in their efforts in the various departments of health advancement.

How the Survey Was Conducted

The facts presented in this article have been assembled by the Research Division of the American Child Health Association as a result of its investigation into the organized health work in 86 American cities. This investigation was conducted in order to secure information which would aid the Association in its program of improving the health of the children of the United States. The cities covered in the study are those whose population in 1920 ranged from 40,000 to 70,000. These cities are scattered over 31 states and represent all sections of the country.

The information was gathered almost in its entirety by five experienced men of the staff of the Research Division, who spent approximately a week in each of the cities specifically assigned to them. The survey was begun in January, 1924, after several months of preparation. To insure uniformity in methods of gathering information, the surveyors worked together before starting out by themselves. The field work was concluded in June of the same year. A year's time has been spent in the analysis of the information and in the writing of the report. The complete survey was published on October 10, 1925, and is obtainable from the American Child Health Association, 370 Seventh Avenue, New York.

The survey touched upon the health work of both public and private agencies. The report treats the entire subject under eleven major health activities, as follows: Vital Statistics; Communicable Disease; Venereal Disease; Tuberculosis; Maternity Hygiene; Hygiene of the Infant; the Pre-School Child Hygiene; School Hygiene; Sanitation; Laboratory; and Popular Health Instruction.

Vital Statistics

The registration of births and deaths is largely in the hands of the Department of Health, as it should be, although this work still rests with the city clerk in nearly a fourth of the cities. The reporting of births is incomplete, and records are not given sufficient study in the planning of health work.

Communicable Disease

There is the widest difference of opinion existing as to the methods of controlling the epidemic diseases. For instance, there were found 28 different procedures in use for the release from quarantine of a dipththeria case. Gaseous fumigation of a room following the termination of a case of diphtheria or scarlet fever is still practiced in a third of these cities, al-

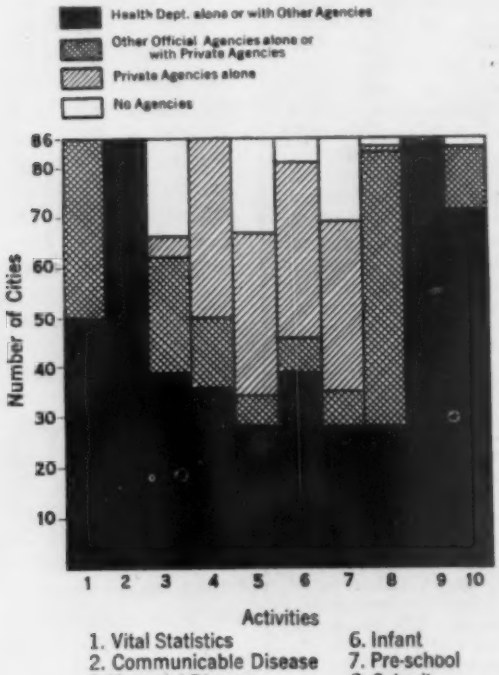
though the ineffectiveness of this procedure has been recognized for many years and has been abandoned for other methods by progressive departments.

In nearly a quarter of the cities, records of communicable diseases were so incomplete that no statement could be given of the prevalence of these diseases during the four years preceding the survey.

Typhoid fever is two or three times as prevalent in the cities of the South Atlantic and East South Central States as in other sections.

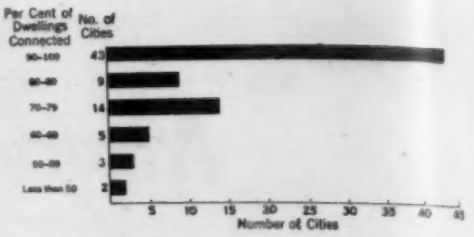
Hospital provisions for cases of communicable disease are provided in most cities, but 18 are still without facilities.

In 49 cities with compulsory vaccination, a question test of several hundred fifth-grade school children in each city indicated that 87 per cent were vaccinated. In the cities where vaccination is not compulsory, a similar test indicated but 56 per cent vaccinated. Judging by this index, the cities of New England are best protected against smallpox. In one city of the Central West but 16 per cent of the children questioned reported having been vaccinated.



TYPES OF AGENCIES CONDUCTING HEALTH WORK IN THE 86 CITIES

A large part of public health work in the smaller American city is conducted by agencies other than the department of health



EXTENT OF SEWER CONNECTIONS

About half of the cities between 40,000 and 70,000 population have fairly complete sewerage facilities, that is, with 90 per cent or more of dwellings connected to the system

The prevention of diphtheria by immunization of children with toxin-antitoxin has been undertaken by the organized health agencies in 40 of the cities, one city having a record of 4,900 children thus protected in the preceding year.

Venereal Disease

Clinics to diagnose and treat venereal disease were found in 65 cities. This disease is required to be reported to the health department in 56 cities. Provisions requiring the administering of prophylactic solutions to the eyes of new-born babies for the purpose of preventing blindness from venereal infection were found in every city. The campaign against venereal disease appears to be largely limited to the clinic work.

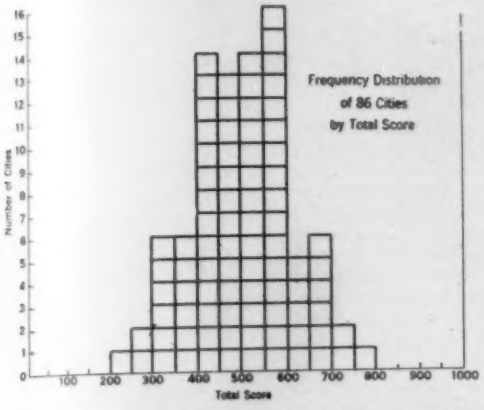
Tuberculosis

The tuberculosis death-rate is found to be less in these cities than for the Registration Area of the country. The reporting of this disease is very lax, however. Information of the number of cases reported could be secured in only 67 cities.

There are actually more deaths than cases on the record books of 17 cities. There are probably not less than 50 new cases occurring each year for every 10 deaths, but the records in this group of cities indicate not more than 16 cases for every 10 deaths. This means that cases are not reported.

There are 71 cities which support special clinics for tuberculosis. It is the private organizations which take the lead in supporting clinics, with 43 per cent of the total as against 28 per cent for the official health agencies.

Public health nursing service for tuberculosis cases was found in 76 cities. There were summer camps to help children who had been exposed to tuberculosis in 7 cities, and open-air schools in 20 cities.



THE MAJORITY OF THE SMALLER CITIES CARRY OUT ONLY ABOUT 40 TO 60 PER CENT OF THE PUBLIC HEALTH ACTIVITIES NECESSARY IN A REASONABLE HEALTH PROGRAM

Scored on the basis of the Appraisal Form, there are but 3 cities out of 86 obtaining over 700 points out of a possible 1,000

Maternity Hygiene

Approximately 10 mothers die annually from puerperal causes in the average city of 50,000 population. Forty cities have taken definite steps to combat the hazards of maternity by the establishment of pre-natal clinics under the direction of physicians. Five other cities have provided mothers' conferences with nursing supervision. There are 41 cities which have yet to organize services such as the above.

Volunteer agencies are responsible for the sole clinic service in this field in 19 cities.

Four cities have no local hospital provisions for maternity cases. The urbanization of America, with the consequent retreat of the more spacious single house and surrounding yard with its greater privacy in favor of the apartment house with its less spacious living quarters, is constricting the American family. Undoubtedly, this is a factor which is responsible for the increased hospitalization of obstetrical cases. About a third of the deliveries in 71 cities now occur in hospitals.

It appears that about 17 per cent of births are delivered by midwives. It is a common practice to place midwives under official supervision, and a third of the cities actually conduct some form of training for midwives.

In general, the organized health provisions for the mothers of these cities is extremely limited in its application.

Infant Hygiene

The infant is better looked after than his mother or his older brothers and sisters. There are but 6 cities which have provided neither clinic nor home nursing instruction service. Seventy cities have medical direction at the clinics, supplemented by a nursing service. It is the voluntary agency which leads in the baby-saving work, 36 clinics being supported through this channel alone, whereas but 25 are provided by official agencies alone. Infant mortality in 76 of these cities has declined from 99 in 1916-1920 to 80 in 1921-1923.

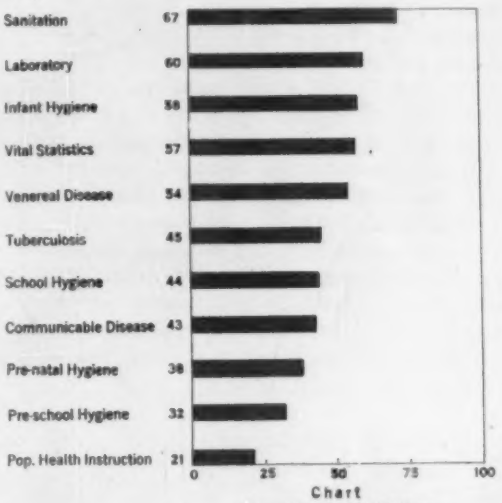
Pre-School Child Hygiene

Little attention has hitherto been paid officially to the child between the ages of 2 to 6. Fifty-two cities, however, have provided some form of clinic service for this pre-school child in connection with the infant welfare clinics.

School Child Hygiene

A great deal of attention is being devoted to the health of the child in school. Sixty-nine cities have school physicians, and 84 cities have school nurses. Dentists and dental hygienists are also provided by many cities.

The physical examination of school children is almost a universal custom. A great improvement is needed in methods, however, before this examination work can be made effective. The examinations, as a rule, are very superficial, 35 cities devoting not over two minutes to each child. There is no uniformity or standardization in the examination procedure



SANITATION (INCLUDING WATER-SUPPLY, SEWERAGE, MILK AND FOOD CONTROL, ETC.), IS THE BEST-DEVELOPED OF THE VARIOUS HEALTH ACTIVITIES

The standing equaled 67 per cent of the requirements called for in the Appraisal Form for City Health Work, published by the American Public Health Association

and in the methods of securing the correction of physical defects. Judging by the available records, the proportion of eye defects in school children varies all the way from one-tenth of 1 per cent to 36 per cent. Such variations reflect a degree of confusion in this work.

There is room for material reduction in smallpox and diphtheria. The best weapons against these diseases are vaccination and immunization. The indications are that only 73 per cent of school children are protected by vaccination. In one city the proportion is as low as 16 per cent. Forty cities through the organized agencies have begun the extensive immunization of children against diphtheria, while the other 46 have still to act.

The sanitation of school buildings is well in hand. Out of 900 schools visited, all but 13 have banished the common drinking cup. Too many schoolrooms are overheated. The lowering of classroom temperatures would be helpful in reducing the prevalence of common colds.

Sixty-six cities have begun to give the teaching of health the place it deserves in the school curriculum. There is great need for this. Questioning of 35,000 school children reveals that a fifth do not drink milk, and that only half visit the dentist annually.

Sanitation

The smaller city has good water-supply. In only 4 cities is the supply definitely regarded as unsafe. Seventy-five cities have provided some means of treatment to insure safety against water-borne disease.

There is a wide diversity in the methods of protecting the city's milk-supply. It is the consensus of opinion that universal pasteurization is the best safeguard against milk-borne disease. Only 8 cities claim that all milk is pasteurized. Only 47 cities have as much as half of their milk-supply pasteurized. In the five years preceding the survey, there are on record 18 epidemics of communicable disease traced to the milk-supply in these 86 cities.

The sewerage question is near satisfactory solution in only half of the cities. The cesspool and the outside toilet are still too common. Sixty-six cities discharge sewage without any form of purification into rivers, lakes, and tide-water.

Steps to conserve space and light by the passage of zoning laws were found in 31 cities, and there are building regulations dealing with light and sanitation in 51 cities.

Speaking generally, the small city pays more attention to sanitation than to any other health activity.

Laboratory

The public health laboratory helps to diagnose communicable disease and supplies the city with its information on the quality of its milk and water. Eighty-one cities have laboratory facilities either locally or through aid tendered by the state board of health. In a number of instances, however, the work is limited, and it can be said that not more than 59 cities have reasonably complete facilities.

Popular Health Instruction

The Ameriian citizen knows little about the health work of his city. Only two-fifths of the cities issue an annual report, and in nearly a third of these cities the report is submerged in the pages of a voluminous year book. Only too frequently such bulletins or reports as are issued are composed only of statistics in all their nudity, with no effort to clothe them with simple interpretations.

Proposed Plan of Organization for Community Health Work for a City of 50,000

The report of the American Child Health Association on which this digest is based is concluded with a constructive and comprehensive plan of community health organization for a city of 50,000 population. In brief, the plan recommends a board of health of five members, and a full-time health officer with a background of special training and experience in public health work. There is also suggested an advisory committee of interested public-spirited citizens independent of the municipal administration whose function is the sympathetic consideration of problems of the health department as they relate to the community at large.

The work of the health department is discussed under six headings: I, Administration and Records; II, Inspection; III, Laboratory; IV, Communicable Disease Control; V, Child Hygiene; VI, Nursing.

The per capita cost of this plan with generalized nursing service amounts to $1.59. An alternative plan with specialized nursing service amounts to $1.78 per capita.

As this plan relates to all health work in the community, the cost is no greater than that found in a number of cities in the survey. The existing practice, however, is for health work to be divided among several agencies.

THE RESIDENTIAL STREET FEATURED IN THIS STREET-LIGHTING PROBLEM

A Variety of Solutions of a Residence Street-Lighting Problem—Part I

Valuable Contribution from Transactions of the Illuminating Engineering Society

As a result of the great interest aroused and the benefits derived from the study of the thoroughfare-lighting problem which was presented by the Illuminating Engineering Society a year ago for solution, another problem was devised this year on residence street lighting.

A typical residence street in a city of over 100,000 population was chosen. A photograph of the street, reproduced herewith, was sent to each one of the selected list of engineers who were interested in the subject, together with a blue-print showing a plan of the street and giving information considered necessary for designing the lighting system. The questionnaire required that the engineers give the annual cost and illumination data in the form of an expenditure per running mile as an annual charge, including fixed charges on the equipment for the proper lighting of this residential street, as well as the amount of illumination which would be recommended for this street in the terminology considered most desirable. Because of complications involved in submitting a fair comparison of cost figures for various parts of the country, and also with a desire to limit the scope of the problem to the purely engineering aspect, it was decided to omit from the several solutions any direct reference to cost figures. The expenditure recommended in each case is shown, therefore, in per cent of the average of all estimates received.

The street to be lighted is one-half mile in

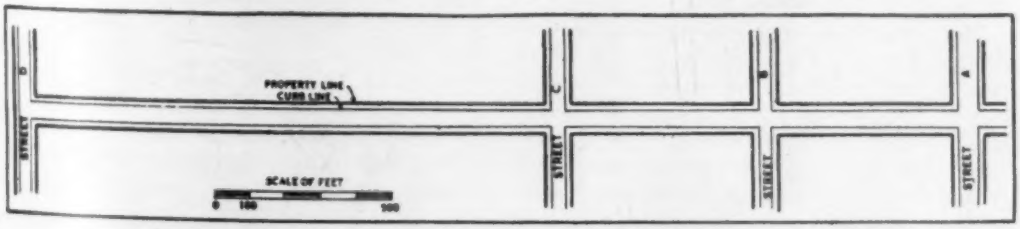


DIAGRAM OF STREET PORTRAYED ABOVE WITH CROSS-STREETS INDICATED

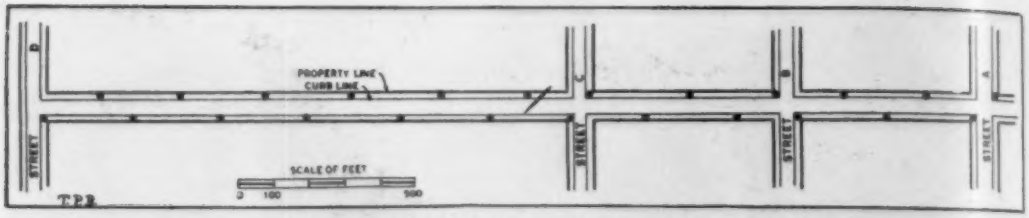


DIAGRAM TO ACCOMPANY T. P. BROWN'S SOLUTION

length and is in a city of over 100,000 inhabitants. The width of the street from property line to property line is 60 feet; from curb to curb, 30 feet. The pavement is sheet asphalt, the sidewalk is 5 feet in width, and the grass plot between the curb and the sidewalk is 10 feet. The trees on the street are as shown in the photograph with the foliage trimmed up to about 10 feet. The houses, which are of the better class, are located 35 feet back from the property line. There are wooden poles on the rear lot line a distance of 150 feet back from the curb, which carry the telephone wires, house lighting 115-volt distribution, and 2,300-volt, 3-phase primary feeders. The street carries the typical residence-street traffic, consisting of pleasure vehicles and delivery wagons. The street throughout presents the same general appearance as shown in the photograph, which was taken at the intersection of street B, looking toward street C. Street A is a thoroughfare; streets B, C, and D are residence streets. The choice of equipment and of the street-lighting distribution system is not limited to the types now in use in the city.

The second part of the problem was involved entirely with design, requiring a layout, a statement of the type and size of lamp, whether series incandescent, multiple incandescent, arc, or gas, the type of circuit, the arrangement of lamps, and the average distance between lamps measured along the center line of the street. Then followed a description of the fixture and post, followed by such discussion and information as was considered necessary by the engineer presenting the solution.

T. P. BROWN
Street Lighting Specialist, Edison Lamp Works of the General Electric Company, Harrison, N. J.

The expenditure required in Mr. Brown's solution is 158 per cent of the average of all contributors' estimates. He provides 30 to 40 lumens per foot of street. The light source chosen is a series incandescent lamp of 4,000 lumens operating at 15 amperes with an underground circuit. The lamps are arranged staggered on both sides of the street with a spacing of 120 feet. A. G. E. Form-8 light alabaster rippled glass globe and canopy with dome refractor is chosen, mounted on an ornamental standard allowing 11 to 12 feet mounting height of lamps. A series circuit is used with insulating transformers.

Mr. Brown's comments are that the street under discussion is a residential street of the better class, with no service lines to mar it. It is felt that the proposed lighting should therefore be ornamental, with underground wiring. The height to which the trees are trimmed more or less dictates the mounting height of the lamps. The light intensity on the street has been set at 30 to 40 lumens per linear foot. If 4,000-lumen lamps be staggered with the 120-foot spacing measured on the center line of the street, the intensity will be about 33 lumens per foot.

In spite of the fact that the cross-streets are typically residential, with the exception of one, a thoroughfare, it has been thought well to lay out the street considering each block separately, thus having two standards on every cross-street. This will place more light where more light is needed and will allow for a simpler layout with the system on the cross-streets than if the problem considered the residential street in its entirety without taking the cross-streets into account.

Dome refractors have been specified because it is felt that there is no particular reason for lighting the trees unnecessarily. There will be enough upward light from the dome refractor equipment to dispel any gloomy appearance, and the extra downward light will tend to equalize the intensity along the street. The circuits can be energized by a 7.5-kw. Type RO transformer mounted conveniently on one of the service alloys connected to the 2,300-volt primary feeders and actuated by an automatic time switch.

JAMES R. CRAVATH
President, Pioneer Electric Company, Richmond, Calif.

This solution is a compromise between good lighting and the probable appropriation available. The expenditure is 49 per cent of the

average of all the contributors' estimates and permits of an illumination of 13 lumens per foot of street. Series incandescent lamps of 2,500 lumens, 6.6 amperes, with an underground circuit are used. The lights are arranged on one side of the street spaced 196 feet apart. The post top type of refractor without outer lantern or diffusing globe is used, the light being mounted at a height of 11 feet on a reinforced concrete standard of any good design. A series circuit is used with film cut-outs.

The lamps are placed on one side of the street, not only for reasons of economy in underground construction, but because one lamp for 196 feet of street with a staggered arrangement gives a ragged lack of uniformity in the general lighting effect. Refractors without outer globes or lanterns are specified in order to get minimum absorption of light, minimum cost of cleaning, and minimum breakage expense. Asymmetric refractors of proper distribution, if obtainable, could be used to advantage here, and if used should be of the two-way type between street intersections and the four-way type at intersections, and the lamps at intersections should be about double the lumens of those between intersections.

W. T. DEMPSEY

Superintendent, Service Maintenance Division, New York Edison Company, New York City

This plan provides for 19.3 lumens per foot of street. The light source is a multiple incandescent lamp of 3,200 lumens, 200 watts, and 110 volts. It has a multiple underground circuit controlled by a time-clock with remote control or high-frequency carrier waves. The lamps are arranged on both sides of the street staggered 124 feet apart. The fixture has a copper casing with internal porcelain reflector diffusing globe. The standard is a main shaft and arm steel tube of cast iron with a 9-foot bracket mounted at 16 feet.

In laying out this street-lighting installation, mast-arm posts are selected because of the numerous trees along the curb lines on either side of the roadway, and it is assumed that the posts will be placed in the most serviceable locations with relation to the trees on either side. As the liability to damage is always present, posts should be designed with the least possible replacement cost. The main sustaining member of this mast-arm post is a steel tube shaft, the lower section of which is made up of standard 3-inch pipe. This steel shaft drops into a 4½-inch hole in the concrete bed, which has been built and allowed to set before placing the shaft in position. The shaft's being wedged into place at the sidewalk line will allow for an immediate removal in case of damage without disturbing the main concrete foundation. The change in equipment requires merely the breaking away of the 4-inch slab at the sidewalk line, installing the new post, and replacing the 4 inches of concrete at the sidewalk line. The circuit is looped from post to post and is No. 10 B & S duplex rubber-insulated lead-covered steel and jute banded cable. There would be a separate circuit in each block on each side of the street, supplied from a 110-volt commercial secondary line on a pole line in the rear yards of the buildings facing the street. Depending on local conditions, the supply circuits for this multiple street-lighting

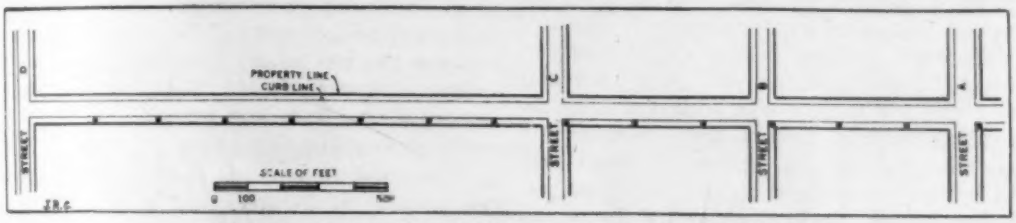


DIAGRAM TO ACCOMPANY JAMES R. CRAVATH'S SOLUTION

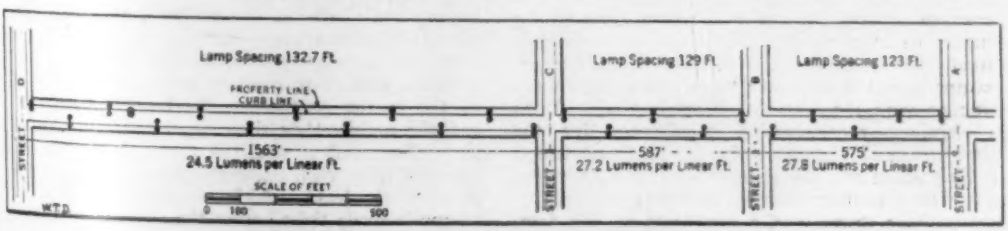


DIAGRAM TO ACCOMPANY W. T. DEMPSEY'S SOLUTION

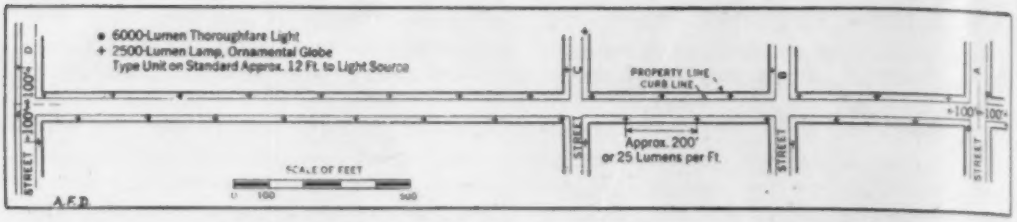


DIAGRAM TO ACCOMPANY A. F. DICKERSON'S SOLUTION

system could be turned on and off by several methods: (1) by a time-clock installed at the point of connection with the commercial secondary main; (2) by a remote control wire actuating three relays on either side of the street; (3) by carrier wave control from the generating station of a 500-cycle frequency wave superimposed on the 2,300-volt primary system actuating six relays responding to this higher frequency only. The cost per mile of street is omitted purposely, as such figures cannot be applied to installations of this kind universally, because installation and operating costs are applicable only to a particular city and are subject to a wide variation depending on local factors, such as labor and material, the size and number of lamps used in lighting a certain area, and contractual relations between the local utility and the municipality. In this particular case it is assumed that the municipality will supply the posts complete, paying extra charges for the replacement of damaged posts. The local utility company will install the posts, supply and install the lighting units, lamps, globes, the underground trenching, circuit cables, control equipment, energy supply, and will take care of the cleaning of the globes, replacement of the lamps, and general up-keep and inspection of the system.

A. F. DICKERSON
Chief Engineer, Illuminating Engineering Laboratory, General Electric Company, Schenectady, N. Y.

The expense of this layout is 154 per cent of the average of all contributors' estimates and provides for 25 lumens per foot of street. The light source is a series incandescent lamp of 2,500 lumens, 6.6 amperes. The circuit is placed underground, and is of the series type with insulating transformers. The lamps are arranged on both sides of the street staggered, spaced 100 feet apart. The fixture is a medium alabaster rippled globe with canopy mounted on a cast iron pressed steel or concrete standard 12 feet above the street.

The street in question is beautiful, largely on account of its trees, and it is extremely important to preserve this beauty or even enhance it by a fairly large amount of upward light. From the strictly utilitarian view-point this tree illumination is not wasted, as it forms a lighter background which tends to reduce glare by lessening the contrast between the light source and its background, and thus, as the pupil is allowed to expand, the retinal image is brightened.

(To be concluded in the December issue. A table summarizing all the solutions is a feature of the concluding portion of this discussion.)

Make Chimneys Tight and Lessen Fire Loss

THE Structural Service Bureau of Philadelphia recommends, through D. Knickerbacker Boyd, consulting architect, as a means to cutting down the fire loss due to defective chimneys and flues, that all chimneys hereafter erected be inspected and certified in much the same manner that electrical installations are examined by fire insurance authorities. It is a prerequisite to the issuance of most policies that a certificate be presented as evidence that the electric wiring, fixtures and appliances have been properly installed in accordance with the National Electric Code. With an excellent recommended "Ordinance for the Construction of Chimneys" by the National Board of Fire Underwriters in existence and approved by a dozen leading national associations' compliance with its terms, and a certificate of this fact, there would be a tremendous and inexpensive step forward in protecting life and property.

Pending official recognition of such procedure, it is suggested that all specifications for building construction contain a clause based on the following recommendation for the testing of chimneys:

"Before the scaffolding is removed from around any chimneys and before any chimney walls or breasts are plastered, but not until after the mortar has seasoned, each flue shall be given a separate and thorough smoke test by the mason contractor. The tests shall be made in the presence of the mason contractor, the heating contractor, and the architect or their representatives. Leaks into adjacent flues shall be especially looked for, and not more than one flue shall be tested at one time. Any leaks which may develop shall be promptly made tight before the chimney work will be accepted as satisfactory."

The Value of Sedimentation in the Treatment of Turbid River Water

By Wynkoop Kiersted
Consulting Engineer, Kansas City, Mo.

SEDIMENTATION and filtration are partners in the process of clarifying turbid waters. If only a safe water is required, filtration may often be dispensed with. When sparkling clearness as well as safety is desired, the union becomes inseparable in the present state of the art, but the dependence of the filter upon the settling basin is not always recognized. Commercial exploitation of the mechanical filter has served to obscure the merits of the settling basin. The filter plant has even been made the "show part" of a water-works and credited with accomplishments to which it is not justly entitled; this, chiefly because of the spectacular contrast between the dullness of the coagulated influent water and the sparkling brilliancy of the filter effluent, an accomplishment effected merely by straining out coagulated sediment in passing through a body of selected sand.

There will always be some local conditions that will be more or less of a determining factor in filter design, but this need not obscure three important considerations: (1) water derived from any source must be thoroughly prepared for filtration before admission to the filter; (2) the mechanical filter is essentially a mechanical strainer; (3) the mechanical appliances and the design of the filter should be as simple and as inexpensive as is consistent with efficient results.

History of Sedimentation

The introduction of systematic coagulation and of chemical control of the sanitary quality of the settled water is the only substantial advance that has been made in the last half-century in the method of operating settling basins. There has also been little improvement in design. This slow development is due in a measure to large capital investment in structures which cannot be sacrificed with impunity. Inefficient structural development has been tolerated until the expense of owning and operating obsolete structures has become prohibitive.

The fallacies of past practice consist of providing a long detention period, the operation of basins in series, and the storage of mud until convenient to remove it. The important consideration of directing and controlling the flow of water in the basin and of removing settled solids continuously has been largely overlooked until recently.

Observed Action of Settling Basins

Theories of sedimentation seem to assume that all particles in settling hit the bottom. This is the case only with heavy sediment like sand or large coagulated masses. The lighter clay particles reach the bottom only after protracted existence as sludge. Sediment collects faster as sludge than in the solidified form, with the result that the sludge sometimes reaches a depth of 10 feet or more in deep basins and presents an almost level plane of separation between the densely muddy water and the turbid water.

Sediment may be divided into two distinct classes: (1) the non-sludge-forming kind, like sand, of large hydraulic value; and (2) the sludge-forming kind, like clay, of low hydraulic value. The sand settles close to the basin inlet pipe, sometimes in banks 12 to 16 feet high, practically confining the inflowing water within a crater. The clay particles become diffused over a wide area and, if allowed to settle naturally, require a long detention period. Coagulation, which collects these particles in masses, accelerates sedimentation and greatly shortens the necessary detention period.

Convection currents in a vertical plane retard the settlement of the sludge-forming sediment, but, unless violent, do not affect the settlement of the non-sludge-forming sediment. The violent eddying motion communicated to water discharged from a single pipe into a crater within banks of deposited sand, gives more irregular distribution of heavy sediment than is the case when the raw water is delivered into the basin broadcast. Temperature stratification produces convection currents which retard sedimentation and brings sludge from a considerable depth to the surface. This disturbance is seasonal and temporary and need not affect the detention period. A density stratification of accumulating sludge compels the movement of entering raw water over these deposits, thereby reduc-

ing both the detention period and the available capacity of the basin.

Forces Influencing Sedimentation

Gravity will carry a particle downward at the same rate regardless of the velocity of flow in a horizontal plane within the limits of settling-basin operation. In other words, velocity of flow horizontally affects the path of the settling sediment, but does not affect the rate of travel in a vertical plane. The rapidity of settlement depends upon the hydraulic value of the particles of sediment. Since the velocity of flow in a horizontal plane clearly cannot affect the rate of sedimentation, the hydraulic value of the sediment becomes the controlling factor in determining the basin's detention period and its capacity, keeping in mind the fact that coagulation of the clay sediment accelerates sedimentation.

Convection currents retard sedimentation. They are to a considerable extent controllable. The inflowing water can be given a low entering velocity by a wide or broadcast distribution, and a straight-line movement by placing inflow and outflow openings directly opposite and of the full width of the basin. The combination of low velocity and straight-line flow suppresses eddies and convection currents and correspondingly increases sedimentation efficiency. Temperature convection currents can be minimized by shortening the basin detention period.

A colloidal condition of the sediment which retards or even prevents natural sedimentation, can be broken up by the use of one or more coagulants introduced separately, with an ample intervening reaction period.

A low temperature of water retards sedimentation. A change of temperature of surface water over a considerable range is to be expected. Viscosity or fluid density is therefore a condition to be reckoned with. In this respect its influence in retarding sedimentation is similar to that of sludge, though less pronounced. The result of a low temperature is to lengthen the basin detention period.

Conditions Affecting Structural Economy

The common practice of the past has been to provide basin capacity equal to two to four times the average daily rate of consumption, in order to provide space for storing a six months' or a year's accumulation of mud. Piles of sand 10 to 16 feet high are no uncommon sight in the Missouri River valley when a raw-water basin is emptied for cleaning. "Strong arm methods" are required to remove it.

The physical capacity of a settling basin is not, therefore, a measure of its detention period when operated by present methods. Assuming the rate of flow as constant, the actual detention period is the physical capacity, less the volume of sediment and sludge stored in the basin. If sediment is removed from a basin continuously as fast as it accumulates, then the basin capacity and the detention period become substantially equal. This equality insures a minimum of capital investment in the operating unit.

Sludge in a settling basin is both a dense and a mobile fluid. In an effort to establish a density equilibrium, it gravitates slowly into the depressions which are formed in the bottoms of most basins, until the plane of division between the densely muddy and turbid water is practically level. Its mobility has been demonstrated repeatedly by opening slightly a centrally located waste-valve, when sludge which has accumulated to a depth of 10 to 15 feet has been lowered 5 feet or more within 24 hours over an area of a half-acre or more.

Mud storage should be regarded as an obsolete practice. In other words, the sludge as it accumulates should be exhausted continuously or periodically through the waste-pipe. Sandy sediment settles quickly and must be removed mechanically.

Sediment deposited as sludge is moved but slightly under the usual operating conditions of straight-line flow, except near a diversion wall over which the water is weired. Here the ascending current along the face of the wall starts a movement of the sludge upward, if not counteracted. The movement, once started, rapidly intensifies and the cavity thus made in the sludge breaks its equilibrium and there is a gravity flow of the sludge in the direction of these cavities in an effort to re-establish a density equilibrium.

Principles of Flow

Straight-Line Flow—Water introduced the full length of a rectangular basin in such a manner as to insure a uniformity of velocity in a horizontal plane and removed at the opposite end by an equally broad outlet, is the ideal straight-line flow. A careful designing of inflow arrangements will effect a close approximation to the ideal. If, in addition, the basin is covered, the conditions which originate and promote temperature convection currents can be largely eliminated.

The dimensions of such a basin depend upon the practical limitations of broad distribution, controlling the width, and upon topography and gravity waste, controlling the depth. With

these two dimensions once fixed, the length of the basin and the detention period are controlled by the time it takes for heavy particles to settle and to be moved mechanically to the waste, or for coagulated sediment to settle and to be conveyed mechanically or hydraulically to the waste. The wide difference in the hydraulic values of the sand and the clay sediment and the corresponding difference of the requisite detention period entail the handling economically of the two classes of sediment in separate basins or in separate divisions of the same basin, and the removal of the deposits by independent appliances.

Radial Flow—Radial flow in a circular basin is deceptive as to its advantages. The hydraulic principle embraced in this kind of flow is that the velocity varies inversely as the radius. Therefore, a rim outflow of water is at the vertical cylindrical section of minimum radial velocity, and the deposited sediment naturally grades itself hydraulically from the center outward. The heaviest sediment is deposited around and near the central waste. These seem like strongly outlined advantages, but the influence on sedimentation of the velocity of flow in a horizontal plane is negligible. The length of travel of the water is a minimum and may be too short for satisfactory sedimentation. The controlling disadvantage of radial flow either outward or inward lies in the fact that either a converging or a diverging flow will produce eddies and whirls. It cannot be straight-line motion, except in shooting filaments for a limited distance. The eddies and whirls keep these sediments in suspension. This character of flow is best adapted to the mixing tank or reaction basin, wherein sedimentation is not desired.

Rotary Flow.—If water be somewhat violently rotated with a paddle in a stationary vessel and sand be dropped into the rotating water, it will be observed that the grains of sand whirl and draw toward the dead center of the rotating water and there come to rest. The hydraulic principle involved in the rotating water is identical with that of wheel rotation so far as the rotation of a liquid may be made to conform to that of a solid; namely, that the velocity of rotation varies directly as the distance from the center of rotation. This principle of rotation has no application in the design and operation of settling basins. It is considered only because of the fact that the observed action of sand or other heavy sediment in the rotating water is believed to have inspired the patentees of certain mechanical appliances.

Spiral Inward Flow.—If water is introduced into a circular basin tangentially at the rim through several openings and taken out through a vertical shaft at the center, it will rotate and will reach the outlet by inward spiral flow. It is evident that the velocity of rotation must increase as the center of the basin is approached. The hydraulic principle involved is that the velocity of rotation varies inversely as the distance from the center. This principle is the reverse of that for wheel rotation. The increasing actual energy of the rotating water inward tends to force particles outward or toward the rim of the tank. The predominating force is the potential energy of the entering water, and its action is inward. The resultant of the two forces is an inward spiral movement. A float placed in the rotating water completes many circuits before reaching the outflow vortex. Either a surface or a submerged float will move toward the rim if the inflow water be slightly decreased, and the reverse abrupt movement inward is noticed if the inflow be slightly increased. This manipulation of inlet flow temporarily disturbs the balance of the conflicting forces and correspondingly disturbs the regularity of float travel until the balance or continuity of flow becomes reestablished.

When these principles of flow are introduced in a circular settling basin, the sediment in the water will encounter the same conflicts of forces as do the floats described above, with the result that sedimentation will take place throughout the tank and the sediment will grade hydraulically but less uniformly than in radial flow.

Method of Operating Settling Basin

There are two ways in which settling basins can be operated under the continuous-flow method: namely, in series, when the flow passes consecutively from one division of the basin to another, usually over a weir in a long, thin sheet; or in parallel, when the several divisions are operated as independent units.

The series method—the one usually adopted, I believe—should be discarded for the following reasons: (1) because of structural complications and operating inconveniences; (2) because of the excessive loss of head thereby experienced in some instances; (3) because of the tendency to break up the masses of floc when the water drops from the weir in passing into a succeeding basin; (4) because of the abrupt departure from the desirable

straight-line, uniform flow at each and every weir, and the tendency to the formation of whirls and convection currents which so seriously retard sedimentation.

The parallel method of operation eliminates the stated objectionable features of series operation, and has the advantage of being a unit complete in itself to deal with when it becomes necessary to cut it out of service.

Inlet and Outlet Arrangements

The single pipe inlet is the simplest and most objectionable form of inlet to a settling basin. Even a multiple pipe inlet distributing water along the entire side of a rectangular basin can be improved by the use of a distributing flume so designed as to insure the least possible disturbance of the inflowing water and the nearest approach to a straight-line, uniform-velocity flow in both vertical and horizontal planes; in fact, efficient sedimentation depends more upon the design of the inlet than upon that of any other feature of the settling basin.

The skimming weir is usually regarded as the best form of outlet, but the skimming feature is overrated when considered in connection with straight-line, uniform-velocity flow and with continuous or periodic waste of deposits. A deep weir overflow is less likely to cause a disturbing up-flow velocity at the outlet.

Layout of Sedimentation Basin

The circular form of basin naturally suggests itself for both inward spiral and radial flows, and the rectangular form for straight-line uniform-velocity flow. The rectangular form is also better adapted to economy of space, particularly for large water-works. However, in adapting structural shapes to operating as well as layout requirements, both forms of construction are likely to be employed.

The design and layout of sedimentation basins should duly regard the hydraulic value of the sediment carried in the water at the source of supply. The sediment may be thus arbitrarily divided into two classes: namely, that which will subside naturally within a two-hour period; and that which must be coagulated and requires more than a two-hour detention period. These two classifications of sediment may be further subdivided as follows:

Sediment requiring a two-hour detention period: (1) the coarse sand which deposits quickly near the inflow opening; (2) the fine sand and coarse clay particles which of themselves coagulate more or less and require a longer detention period than coarse sand.

Sediment requiring coagulation and more than a 2-hour detention period: (1) sediment which coagulates and settles quickly after the coagulant is applied; (2) colloidal sediment which requires time for coagulation and settlement.

The two-hour class of sediment can be handled in preliminary basins, and the more than two-hour sediment in coagulating basins. Between the preliminary and the coagulating basins, the necessary reaction basin should be introduced for the application and reaction of the chemical.

Preliminary Basins.—A two-hour detention period is suggested for the preliminary basin. The preliminary basin can be subdivided and furnished with appliances as follows: (1) Subdivide the preliminary basin by partition walls into rectangular units in such manner that each unit shall have a length twice its width. (2) Inlets and outlets to be distributed the full width of each unit. (3) Each unit to have straight-line, continuous flow from inlet to outlet, and two continuous wastes at the center of two inscribed squares. (4) Install and operate continuously two mechanical appliances in each unit for moving sediment to waste openings. The appliances nearer the inlet should run as a rule faster than the one nearer the outlet, and both should have adjustments for varying the speed to conform to the requirements due to changes of turbidity of the incoming water and to the rapidity of sedimentation.

The suppression of minor whirls and eddies at the inlet of the units of the preliminary basin is not so necessary as at the inlet of the units of the coagulating basin, and, therefore, less refinement of design at the inlet is permissible in the former than in the latter basin. In both cases, however, the multiple inlet is desired in order to avoid major whirls and a concentration of deposits which might stall the mechanism.

Mixing and Reaction Basin.—The water from the preliminary basin should pass directly into a mixing and reaction basin of a size for giving a detention period of 30 to 45 minutes. This basin can be advantageously designed of circular form for spiral inward flow. Its use tends to keep suspended particles distributed and to mix the coagulant solution with the water as it flows spirally to a central vortex discharge. The inlets can be in multiple and so arranged as to assure thorough

mixing of the water with the coagulant. Each unit of the preliminary basin can have its independent mixing and reaction basin, or the flow from all the units of the preliminary basin can be collected into one central mixing basin. When two coagulants are employed, it may be advisable to use a second reaction or mixing basin of the same type as an adjunct to each of the coagulating basins.

Coagulation Basins.—The detention period for coagulation basins should be that which would permit particles of coagulant colloidal clay to subside, or from six to ten hours. Super-coagulation, or the use of a coagulant in excess, within practical limits serves to shorten the detention period and to minimize the capital investment. The coagulated clay in a sludge stage should be removed as completely as possible continuously or at frequent intervals through waste pipes well distributed throughout the basin. Mechanical appliances in a small section at the inlet end of the coagulating basin may prove beneficial in collecting the flocced masses of non-colloidal clay which settle quickly to the bottom. Otherwise, gravity will bring the sludge to the waste pipe.

Coagulation basins of rectangular form designed for straight-line, uniform-velocity flow, with an inlet carefully designed with regard to hydraulic balance and the suppression of convection currents, and with an outlet so arranged as to admit of ready and complete detachment of any unit, give the best results. No baffles are needed in basins designed as outlined. The depth of the basin at the rim need not exceed 10 to 12 feet. A limited amount of storage is needed to equalize the flow onto the filters. This can be readily provided for in an extra basin receiving the discharge from all the coagulation units.

Conclusion

A turbid water rarely containing heavy sediment may not require preliminary sedimentation, but may be passed directly into the reaction and mixing basin. One coagulant can be added as the water enters the basin, and the other applied as the water leaves the basin in a vortex discharge. On occasions of unusual turbidity, super-coagulation can be profitably employed. A settling basin designed for intensive operation is yet a thing of the future. In this regard the field is open for investigation.

ACKNOWLEDGMENT.—From a paper read before the Texas Section of the Southwest Water Works Association.

As Cities Grow, Per Capita Costs Increase

THE hope is often expressed in a growing city that, with further growth, per capita costs of the city government will decrease. That such a hope is an illusory one has been emphasized on more than one occasion in THE AMERICAN CITY. Recent testimony to the fact that the trend of taxes in a growing city is always upward is to be found in a bulletin of the Public Service Institute of Kansas City, Mo. Commenting on the fact that the operating expenses of the city government of Kansas City had increased from $3,525,000 in 1913 to $7,011,766 in 1923, the Institute said:

"Disregarding abnormal increases or decreases which may come at times due to such factors as changing price levels, the trend of city government costs in a growing city is always an increase at a greater rate than the increase in population. This is shown by comparisons between larger and smaller cities and by comparison of the costs of separate cities over a period of years.

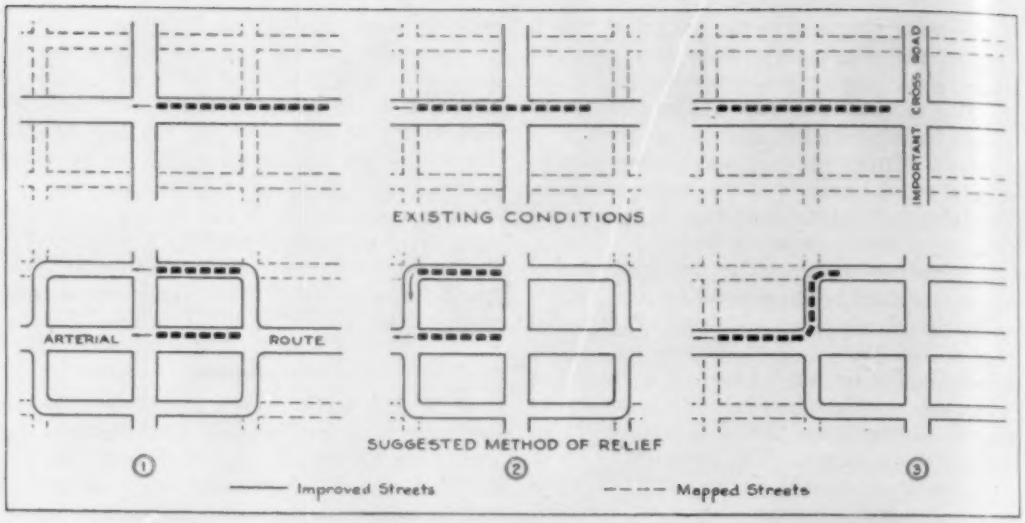
"The reasons for this are quite obvious. As a city grows, it is compelled to take on new services. In the small city only the fundamental services, such as police and fire protection, simple health protection, water-supply, sewage disposal, etc., are necessary. As the city grows, new services must be undertaken—garbage and rubbish collection and disposal, recreation, inspection of machinery, buildings and food, welfare activities, city planning, etc. In addition, old services are extended and become more complicated—street cleaning, health, police and fire, sewage, schools, etc. These new services and extensions of service are demanded by the people, who are thus responsible for increased cost. These reasons apply also to public improvements. Requirements for parks, grade separations, transportation facilities, trafficways, playgrounds, viaducts, increase at a more rapid rate than population.

"At the same time, the same work costs more, due to higher wages scales and the increased difficulty of doing certain types of city work under crowded conditions."

Safety Contest for School Children and Teachers

THE National Automobile Chamber of Commerce, for the fifth consecutive year, is offering prizes for the best essays on traffic control and safety by boys and girls in grade schools, and for safety lessons by teachers in grade schools. More than $6,500 in prizes is offered, the first prize for pupils being a trip to Washington and a gold watch, and for teachers an award of $500 and a trip to Washington.

While the funds for the awards are provided by the Automobile Chamber, the administration of the contests is in the hands of the Highway Education Board, Willard Building, Washington, D. C., to which all communications and queries on the subject should be addressed. Details of this fall's contest, which will close in December, will be sent to all school superintendents by the Board.

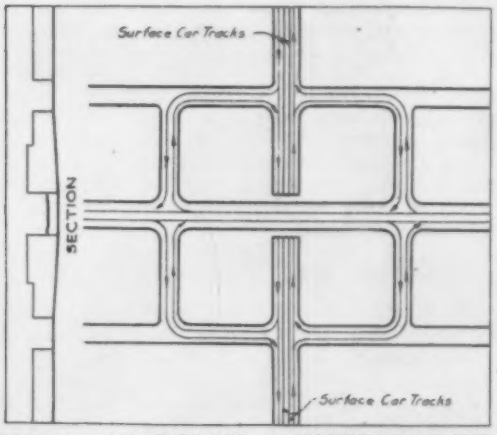


PLAN A.—A METHOD FOR REDUCTION OF TRAFFIC DELAY ON MAIN ARTERIAL ROUTES
Applicable in outlying districts at intersections with important crossroads

To Expedite Traffic at Important Intersections on Main Arterial Highways

By Harold M. Lewis
Executive Engineer, Regional Plan of New York and Its Environs

MOVEMENT of traffic on main arterial routes is at present greatly impeded by the interference of cross-traffic on the principal intersecting highways. A complete solution of this problem generally requires considerable expenditure, but slight changes in existing routes and careful design of new highways can accomplish much without appreciable extra expenditure. There is indicated in Plan A a suggestion for expediting the movement of traffic at important intersections on the main arterial routes. This could readily be applied to sections on the outskirts of a city where many of the mapped streets have not yet been opened. Traffic movement is indicated by three steps, No. 1 representing the time when traffic is opened on the arterial route, and Nos. 2 and 3 representing conditions after approximately equal time intervals. If the streets immediately adjacent to the intersection could be opened up as shown, and traffic crossing the intersecting road in each direction would use one of these new streets as well as the arterial route, twice the amount of traffic could be passed through within the same interval of halt upon the cross-street. The fact that the vehicles waiting on the main route would have a somewhat shorter distance to go would enable them to get out of the way of those using the side streets.



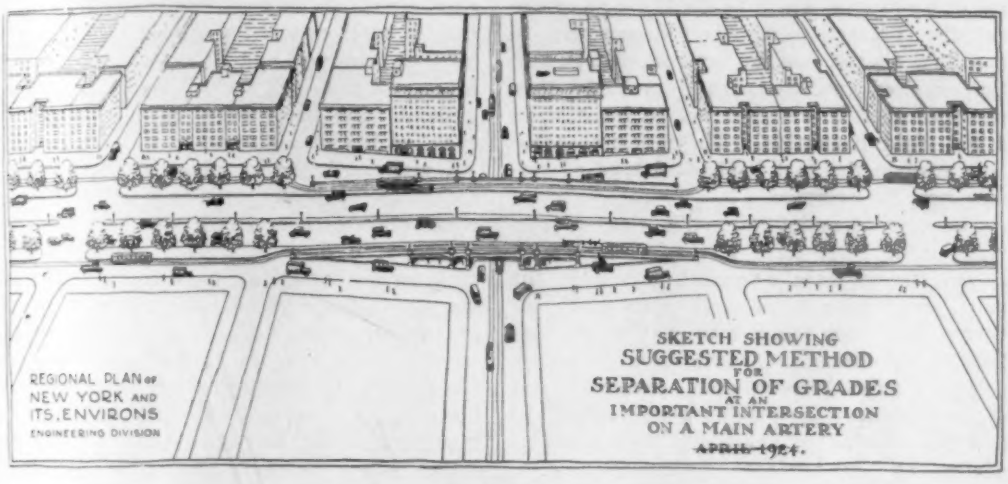
PLAN B.—DIAGRAM FOR A CONTINUOUS MOVEMENT OF TRAFFIC AT THE INTERSECTION OF TWO MAIN ARTERIES

This proposal represents what might be called a preliminary solution. A more permanent and satisfactory solution which would furnish continuous movement upon both

streets is illustrated in Plan B. This shows the arterial route carried above the intersecting thoroughfare, and a system of traffic regulation prohibiting left-hand turns but making use of adjacent roadways so as to provide uninterrupted traffic on both the principal streets and for vehicles wishing to turn from one into the other. The proposal includes the complete change in grade at both intersecting streets, and not a viaduct on the arterial highway. The buildings at the principal corners could readily conform to the proposed levels on both streets.

away from the main intersection, thus decreasing the intensity of congestion at the latter. The under-crossing is left open for about 50 feet beyond the street lines of the cross-street so as to permit, from both the service roadways and the intersecting thoroughfare, an unimpeded view of all vehicles approaching the intersection.

On those highways serving as exits and entrances to the metropolitan district which have an excessive rush-hour traffic, most of which is in one direction in the morning and in the reverse direction in the afternoon, the



PLAN C

It is well established that the delays which result from the intersection at grade of two heavily traveled traffic-ways greatly decrease the capacities of such thoroughfares at the times of maximum traffic. It is far easier to relieve such conditions by removing the causes of delay than by increasing the capacities of the roadways. If properly planned in advance, such improvements can be readily financed when needed

On a boulevard with a central through-traffic driveway and two service roadways, it would probably be desirable to connect the service roadways directly with the intersecting thoroughfare. Plan C shows a method by which this can be done. Trolley tracks are indicated on both streets; the central roadway and the trolley tracks on the arterial highway are carried over the intersecting street. Trolley stations on the former are indicated on the upper level. Those streets immediately adjacent to the main cross-streets do not have a roadway connection across the boulevard, but vehicles wishing to turn off the latter would do so at points two blocks

total capacity might be greatly increased by having the roadway divided into three parts, so that two of these might be used for the direction in which the rush-hour traffic is going. In order to do this readily there would have to be either three or six moving lanes of traffic. The actual method of subdivision would, of course, have to be varied according to the number of lanes available.

Interference from cross-traffic, on a boulevard with one or more strips of parkway, might well be confined to the more important streets by having the parkways so arranged as not to furnish a direct crossing except at such streets.

THE NEED OF A COMMUNITY PLAN AND PROGRAM

The enormous loss in human happiness and in money resulting from the lack of a community plan and program needs no proof. Our cities do not produce their full contribution to the sinews of American life and national character. The moral and social issues can only be solved by a new conception of city building.

—Herbert Hoover.

Experiences with Small Service Pipes

By J. E. Gibson

Manager and Engineer, Water Department, Charleston, S. C.

WHEN water companies first came into existence, water-works men insisted upon the consumer's plumber furnishing service pipe and laying it to the main in the street, the water department reserving to itself the right to tap its main, for which it charged a small fee. Naturally, the plumber, in his desire for profit, furnished the cheapest material with which he could get away under the contract. The water department, to a certain degree, had the same motive, in that they desired consumers; and probably they reasoned that it was best not to insist upon a too rigid inspection. These desires probably explain the past haphazard type of service now so common.

The cost of maintaining this class of service in the early days was relatively small. Paved streets were unknown, except in the most progressive cities, and when leaks occurred, they soon found their way to the surface of the ground, as there were no underground structures—sewers, conduits and drains—to carry the leaking water away. In this day of modern pavements with a multiplicity of sub-surface structures—sewers, drains, conduits, etc.—the cost of locating and repairing leaks in our small service pipes compels us to pay attention to and adopt a much higher class of construction, both as to material and workmanship.

We also suffer from another difficulty, due to having grown like "Topsy," without restraint or training, in that one consumer applies for an inch service, and another consumer thinks he must have an inch-and-a-half service, although his demands and requirements may be less than those of the first. Fortunately, however, in more recent times we have realized our mistakes and have adopted a service charge based upon the size of the meter or tap, and this has corrected, to a greater or less extent, the desire of the consumer for an impractical size of service pipe.

We feel that it is the duty—yes, it is incumbent upon the water department—to adopt a smaller size of service pipe for residential properties, and to advise with the architects and builders as to what is the proper size of service pipe to give them satisfactory service. It has been our experience that this phase of building construction is often left to guess rather than to scientific design or thought, with the result that the owner often finds himself without adequate water-supply or with a high minimum charge.

Kinds of Service Pipe

We have at present galvanized iron or steel; galvanized iron or steel lead-lined; galvanized iron or steel cement-lined; lead pipe throughout; lead tin-lined and tin throughout; copper, brass and cast iron service pipes, all with or without lead goosenecks, as the custom in each locality may dictate.

Usually, all service pipes are attached to the mains by some form of brass or bronze corporation cock screwed into the main, and at the curb there is usually placed another cock for the control of the supply to the building or buildings without the necessity of going to the street main. In all cases where service pipes with lead goosenecks are used, the custom, to within the last ten years, has been to use a wiped joint, the ends of the gooseneck being furnished with a brass or bronze nipple for connecting to the galvanized or steel service pipe. During the last ten years, however, there has been developed a bronze lead-to-iron flanged coupling where the lead pipe is flanged out, forming a seat in the union of the coupling, and the iron or steel pipe is screwed into the opposite end of this union coupling. Where lead pipe is used throughout the service, the connection to the corporation cock and the curb cock has been made with either a wiped joint or lead flanged coupling. This method of connection applies to all of the types of service pipes enumerated above, wherever goosenecks are used. In cases where goosenecks have not been used, it has been the custom to use some form of swivel-joint screwed-thread fitting to take care of any settlement in the main or service pipe so as not to pull out or break off the corporation cock.

Recently there has been developed a soft brass and copper service pipe, using standard wrought iron pipe threads and fittings. There has also been developed a soft copper pipe using a flanged bronze coupling without threads, the joints being made in a similar manner to those of the lead flanged coupling

above referred to. I have had no experience with either of these latter type services and, therefore, in the following remarks you will understand that I refer principally to galvanized iron or steel services with lead goosenecks or with all lead services. I do not want to give the impression that I believe that any type of service pipe can be used universally throughout our country. The local conditions as to soil, water, or paving will have to be considered, but I do want to stress the importance of the service pipe, and the necessity of giving it more attention in the future than we have given it in the past.

Who Should Make Tap and Street Opening?

Some water departments make only the tap, depending upon the plumber to do all of the rest of the work. I am unalterably opposed to this method, and believe that the courts have rightly condemned it. The water department, either private or city, is the only responsible party and should be the only one permitted to open up the street or maintain property within the street limits. Therefore, I feel that the service pipe from the water department's main to the property line should be laid by the water department, which should have the entire responsibility as to its maintenance. I feel, however, that the first cost of installation of this service pipe should be borne by the consumer, unless the law and city ordinances are such as to permit the water department to make an annual frontage charge on all property where service pipes are installed, without regard as to whether the property is being used or not. My preference is to have the consumer pay the first cost of installation, which acts as a perpetual bond of his intention to consume water from the department.

Let us now consider the service pipe, commencing at the main and extending through to the property line.

The tap or corporation cock—should it be placed on top at 45° or 90° from the vertical? Condition, depth of main, will probably govern, but I personally am in favor of about 45° from the vertical, in that it gives a nice, easy operation of the tapping machine in installation and permits of an easy bend of the gooseneck away from the main. It gives ample opportunity for settlement of the main with a minimum likelihood of snapping off the corporation cock.

Should the corporation cock extend through the wall of the main? Some will say "no," but I am coming to believe that it is good practice to have this corporation cock extend through and into the main, possibly ¼-inch as a minimum. In our experiences at Charleston during the last three to four years, where we have had occasion to renew hundreds of service pipes, removing numbers of corporation cocks, we have found the tuberculation and rusting over of the opening in the main beyond the end of the corporation cock to such an extent as to reduce the opening to about ⅛-inch in the case of a ¾-inch corporation cock; and in a few instances to actually close up the opening entirely. Had the cock extended into the main, say ¼-inch, I cannot conceive of this condition having occurred under any circumstances.

Lead Goosenecks—Wiped Joints

Lead goosenecks with wiped joints have given satisfactory service in by far the majority of our cities, but occasionally we find that, because of soil conditions, wiped joints are not satisfactory. This is the case at Charleston, where we have a low coastal peninsular, with high saline ground water. There seems to be a galvanic action that soon destroys the amalgamation with the brass nipple, so that the joint leaks, and it is our practice to use altogether a lead-to-iron union.

Probably 90 per cent of the water companies throughout the country use galvanized iron or steel pipe for their service lines, and in many cases there is little or no trouble. However, with filtered waters, low in alkalinity or relatively high in carbonic acid, the results are not satisfactory. Considerable trouble from tuberculation and incrustation is had with the accompanying red-water troubles. Galvanized iron or steel is admirable in one respect; that is, it is not easily injured by other operations in the street and will stand considerable abuse before being punctured, flattened, or broken. In acid or saline soils galvanized iron or steel does not have a long life.

Curb Cock

Usually the curb cock gives relatively little trouble, particularly if it is the inverted key type, round way opening, but it does give trouble. It is primarily for the control of the water to the premises to avoid having to dig up the main to reach the corporation cock, and is for the exclusive use of the water department. This latter use, however, is not restricted, as the owner and plumber feel that they have a certain proprietary interest in it,

and usually the troubles with the curb cock are due to these extraneous uses. Here again, we have the question as to whether the service pipe ends at the curb cock or extends to the property line. I think the service pipe properly should extend on to the property line. I understand that in some localities the curb cock is put at the property line rather than at the curb line. Our practice at Charleston, however, is to put it at the curb line.

Meters

Is is, I believe, becoming almost the universal practice in the South, where frost is not severe, to place the meters at the sidewalk either at the curb line or just inside of the property line. In the North, where frost extends downwards several feet, this is not possible nor desirable; but the practice certainly does lend itself to easy reading, inspection, and maintenance of meters, as you are relieved of all delays due to absence of owners or tenants of properties. At Charleston, it is our practice to set the meter in the service pipe immediately behind the curb cock. We use a 7½-inch cast iron brass meter coupling which permits sufficient space between the meter and curb cock to allow for the setting of the meter-box. The meter is set about 15 inches below the surface of the ground, and we have yet to experience a frozen meter where the meter was actually in contact with the ground at the bottom of the meter-box.

Lead Service Pipes

Lead as a material for water conduits has been known and used as long as any other material; in fact, we know that the earliest Roman water-supplies used lead pipe for conduits and, therefore, under normal conditions there can be no objection to lead for service pipes. Mechanically, the objection is that lead services are easily injured by other operations in the street, such as being flattened or pierced by picks and shovels, and where there is a saline soil and wiped joints are used, galvanic action may occur that weakens the wiped joint. Chemically, some waters attack the lead and dissolve it, in which case lead poisoning may result. I have in mind a case in South Carolina where the water-supply was from deep wells very low in carbonates and relatively high in carbonic acid, where the lead was dissolved more or less rapidly; particularly on service pipes where the water was being used regularly. This condition was corrected, and the entire trouble relieved by the use of a very small amount of soda ash in the receiving well from the pumps.

Lead has so many advantages that, to my mind, it forms the most acceptable material for service pipes. It is non-corrosive from acids in the soil, does not incrustate or tuberculate, is easily manipulated, can be bent to easy curves around obstructions, such as sewers, drains, and conduits, and when installed by competent workmen gives no trouble at all. Further, if it becomes necessary at any time to remove the service and install a larger one, the old material has a high salvage value, which is not the case with any of the other materials now being used.

Lead Tin-lined Service Pipes

I have had no experience with this class of service-pipe material, but I judge that it has about the same mechanical difficulties as the regular all-lead. Chemically, however, it offers greater resisting qualities to the corrosive action of the water, and the danger of lead poisoning is practically removed.

Lead-lined Galvanized or Steel Service Pipes

This composite material combines the many advantages of the two metals, the galvanized iron or steel protecting the thin-walled lead pipe from mechanical injury, and the lead lining, in its turn, protecting the galvanized iron from internal corrosion. The danger from lead poisoning with certain waters is still present. It is installed the same as standard galvanized pipe, except that slightly greater care is required not to injure the lead lining. Fittings are furnished with lead lining, so that when the joints are made up, the interior presents a continuous lead surface.

In soils that attack the galvanized iron or steel pipe, it offers no advantages over ordinary galvanized iron pipe. The jacket or iron casing is eaten away and the lead lining, being too thin to withstand the pressure, bursts. It has no salvage value such as the all-lead service, on account of the difficulty of removing the lead.

Lead-lined Tinned Galvanized Iron and Steel Services

No general remarks are necessary as to this material other than to say that it combines the several advantages of the individual composites.

Galvanized Iron Cement-lined Service Pipes

I have had no experience with this material, but I can see that it has many advantages, and where the soil is such as not to attack the galvanized iron, I should think it would be ideal, as my experience with cement-lined cast iron pipe and thin-walled wrought iron pipe has been very satisfactory indeed. Tuberculation or incrustation does not take place, and the carrying capacity is maintained indefinitely.

I should think it would require great skill in installation and would not be susceptible to bending to any great extent. To make it satisfactory, fittings should be cement-lined also.

Brass Service Pipes

Brass or bronze has been known and used for ages in the manufacture of cooking and distilling vessels and for containers of liquids. It is particularly resistant to the action of water and was used for steam pipes, boiler tubes, and heater tubes almost universally in the early steam days, both in land and in sea service. It is still used almost without exception for condenser and heater tubes.

The economical and commercial developments of mining and manufacturing copper have so reduced the price as to bring this material within reach of competition with iron and lead pipe for services. Within the last few years there has been placed upon the market a semi-annealed and soft brass pipe, iron pipe sizes, that can be cut and threaded with standard iron pipe tools. This pipe has many advantages. It combines all of the admirable features of the iron pipe, being easily cut, threaded, and installed, having freedom from mechanical injury from other operations in the street and being practically free from incrustation or tuberculation, and chemically resistant from corrosion except under conditions that are not often met with in water service.

I have had no experience with this type of service pipe, but the objections, as I see them, are:

1. Lead goosenecks will have to be retained.
2. Mechanically, unless the pipe is well annealed, it will probably open up or split along the seam. This is probably the most serious objection, from my viewpoint, as my experience with brass nipples has been very disappointing; so much so that we insist upon only cast brass nipples being used upon our service pipes and connections.
3. Greater care will have to be used to secure good threads to avoid leaks, as our enemy, rust, will not step in and make rust joints for us when we use this material.

Copper Service Pipes

About the time that the iron pipe size semi-annealed or soft brass or bronze pipe was brought out, there was also placed upon the market a light-gage copper service pipe. This pipe comes in various lengths, the longest being 20 feet, and the joints are made by flanging out the ends of the tubing and using a collar spherical union very similar in design to the well-known iron-pipe-to-lead flanged coupling.

Again, I must plead ignorance of having had any actual experience with this material other than that of making a joint at one of our state conventions. Undoubtedly, this material has advantages over all of the service pipe heretofore enumerated and has only a limited number of their troubles. Briefly, its advantages may be stated as follows:

1. Soft copper easily flanged and very flexible. It can be bent around obstructions.
2. Elimination of lead goosenecks.
3. Light in weight and easily handled.
4. No threading required to be done in the field. Flanging can be done with small anvil and swedge so that unskilled workmen can make a joint.
5. All thread cutting and fitting done on special parts and furnished in the form of fittings.
6. No jointing compounds or grease required, as all joints depend upon compression of the soft copper between finished relatively hard bronze surfaces.
7. Tools required in the field reduced to a hacksaw and two monkey-wrenches.
8. Uniform class of material throughout service, eliminating galvanic action between dissimilar metals.
9. Non-corrosive from external and internal conditions.

The objections are:

1. Lightness; or, rather, the thin wall permits of its easy collapse by a blow or from the weight of rock or dirt in backfilling.
2. Injury from other operations in the street.
3. Probably less salvage value in case of replacement.

Red-Water Plague

None of these materials in themselves will cure the red-water plague, because the principal offender is the house plumbing, and the house will continue for a long time to be with iron pipe.

I can see no hope of getting entirely rid of the red-water plague until we use some non-corrosive or rust-resisting protective coating

throughout the entire water-works system, including the house plumbing.

The "proof of the pudding is in the eating," so in service pipes the material that gives the best results in a specific plant under the existing conditions is probably the proper one to use in that city. There are other troubles, however, besides those of material.

Workmanship and Labor

The men entrusted with the installation of service pipes should be thoroughly reliable, trustworthy, and honest and should be instructed carefully as to how the work should be done, and that under no circumstances should any work be covered up until inspected and tested.

Good tools and equipment should be furnished and maintained for their use. All pipe should be cut with a hacksaw rather than with a wheeled cutter, and if it is cut with the wheeled cutter the burr should be reamed out. My objection to the wheeled cutter is that it requires reaming afterwards, and under stress or oversight this reaming is more often omitted than done.

Location of Service Pipe

The service pipes should, in all cases, enter the consumer's property from the front or street upon which the building faces and is numbered, without regard to whether the building is situated upon a corner or not. This precaution is necessary to avoid confusion in records, and to enable the department to render quick service in case of necessity.

Driveways should be avoided on account of paving and annoyance in case repairs are necessary.

Other service ditches, such as sewers and drains, should be avoided. This is necessary to protect the service from injury due to other workmen working in the street. The drains and sewers are usually at a lower elevation, and if service pipes are laid in these same ditches, settlement occurs which may break the water service pipe. Further, in case of repairs to other pipes at lower elevation, the service pipe must be supported, and it is seldom, if ever, securely supported during repairs or protected and supported in backfilling. If leaks occur and they find their way to the drain, they may undermine the street surface, should the drain be defective.

Depth of Service Pipe

The frost-line will probably dictate the depth to which service pipes are to be laid. The nature of the soil and type of paving will also have to be considered. The danger of injury from traffic is greatly reduced when the streets are paved, the critical period being that time during paving operations. The minimum depth, however, in our judgment, is 15 inches below the subgrade of paving, and 24 inches in unpaved areas. For cold climates the frost-line will necessitate greater depths.

Placing Services in Advance of Paving

Put this phase of service pipes in the "Don't" column first and last items. It is an economic waste. Location and size are never satisfactory. If paid by the consumer it is always a sore spot, and if paid by the water department it places an undue hazard in unprofitable investment and a perpetual menace in maintenance, and usually nine times out of ten when finally required there is something wrong, necessitating opening up the street at the main, anyway. The capital and interest on this type of utopian investment to save cutting open a new paving would more than pay for repaving the streets, in many cities.

ACKNOWLEDGMENT.—From a paper read before the American Water Works Association at Louisville, Ky.

Safety Education in Louisville, Ky.

THIS fall marks the third year of safety education in the Louisville public schools. At the present time there is a membership of more than 10,000 in the junior safety councils, as reported by Mrs. Frances H. Miner, Director of Health and Safety in the Louisville public schools, at the recent convention of the National Safety Council, held in Cleveland. Every school that contains a sixth, seventh, and eighth grade has such an organization, and, in addition, a graded course of sofety education is actually being taught in every grade school in the city. The junior safety councils occupy an important part in the school life. In a good many schools the entire disciplinary work is carried on through this organization. The members are responsible for preventing accidents in the school grounds and environs; they act as guards or safety patrols in the halls and yards; help the younger children across the street; and, in some schools, conduct a student government organization. A board of directors of the junior safety councils was chosen from schools in various parts of the city, to tie the work of the local councils together and to help reduce accidents. The central organization plays an important part in developing safety consciousness throughout the city, as children are born leaders in matters of this kind. The *Louisville Public School Safety News* was published every month last year.

Prevailing Requirements for Pavement Guarantees in Principal Cities

By Walter E. Rosengarten
Traffic Engineer, The Asphalt Association

A QUARTER of a century ago knowledge of the technique of asphalt paving mixtures was understood by only a few engineers and paving experts who had devoted considerable study to the subject. There was little printed literature dealing with paving mixtures and their stability. The result was that for many years, officials and engineers in general considered this high type of paving somewhat of a mystery. Specifications were not very exacting, laboratory equipment for testing materials was not generally available, and considerable dependence had to be placed upon the contracting companies that were laying the pavements. The official or engineer was more or less at their mercy and simply trusted that a stable pavement would result. Nevertheless, many pavements laid in those days gave excellent service and are still carrying traffic economically, even though there has been a marked change in character and amount. This change, however, might be construed as a benefit to the asphaltic types, as the increased kneading and compressing by the rubber automobile tires and greater loads tend towards more compact and stable mixtures; also the occasional dropping of oils from the automobile motors keeps the upper skin coat of the pavement alive and flexible.

Maintenance Guarantees

In the early days a practice grew up whereby the official or engineer who lacked actual knowledge of asphalt pavements could protect himself and the community and insure having a high-type smooth pavement for a long period of time. This consisted in requiring the contractor to guarantee his pavement over a period of from ten to fifteen years. If any repairs or maintenance became necessary during the period of guarantee, the contractor was required to make them at his own expense. To cover this, a guarantee or maintenance bond was given the community or a portion of the construction cost retained.

As more information on asphalt paving mixtures became generally available, engineers drew up more rigid specifications and the testing of materials became more usual. With better understanding and closer checking, it was found that the long guarantee periods required were not so necessary and only tended to make the pavement more expensive, as the contractor had to add to his bid a contingent amount to cover cost of up-keep. With the more efficient design and inspection, the community found that it could save money by assuming a greater responsibility for a satisfactory pavement, with the result that to-day maintenance guarantees have been reduced to five years and frequently less, while some communities take over the entire responsibility and require no guarantee. A recent study of this feature by The Asphalt Association, which included specifications from many American cities of over 100,000 population, has revealed that in approximately 60 per cent of the cities that supplied information a five-year guarantee is now required. Only one city, Buffalo, N. Y., retains a 10-year guarantee, while Chicago and four Pacific Coast cities require no guarantee. Twelve cities require a guarantee of from one to four years. Four cities report doing their construction by force account. Investigation also showed that on brick and wood block pavements a similar guarantee was usually required. In several instances the guarantee periods varied for different types of pavements, the period of guarantee for other types being usually less than that required on asphalt pavements. In such cases the inconsistency exists of requiring a longer guarantee period on a type of pavement that has been in use for a long period, such as asphalt with its demonstrated life, than is required on comparatively new types that have not demonstrated their serviceability. Where various types are put in competition on a basis of first cost, it would seem just that an equal period of guarantee be required on each pavement.

While there are many arguments in favor of eliminating guarantees entirely, it might be suggested that if the guarantee period were increased to something like twenty to twenty-five years, the bids on various types of pav-

ing could readily be compared, for they would give an excellent measure of the ultimate cost of different types of paving.

In order to insure that the maintenance guarantee is carried out, a city usually requires the contractor to furnish a bond varying in amount from 10 to 100 per cent of the contract price. Some cities require a cash deposit, while others retain from 3 to 10 per cent of contract until expiration of guarantee. At times a combination of both bond and retainer is required. Interest on the money retained is allowed the contractor by several cities. Details on the maintenance guarantee as required by 53 of the principal cities is given in the following table:

MAINTENANCE GUARANTEE ON PAVEMENTS

City	Guarantee Period			Remarks
	Asphalt Years	Other Pavements Types	Years	
Boston, Mass.	5	Granite block and wood block	5	
Fall River, Mass.	5	Granite block	5	
Lowell, Mass.	5			
New Bedford, Mass.	5			Contractor given option to repave street openings. Guarantee terminates on replaced area, and if a cost exceeds 50% of area, guarantee in that block terminates.
Springfield, Mass.				City does its own street work.
Worcester, Mass.				All paving done by city.
Providence, R. I.	5			Bond required in amount of 40 to 50% of contract.
Bridgeport, Conn.	5	No guarantee on other types		Maintenance bond required.
New Haven, Conn.	5		5	Bond required.
Albany, N. Y.	5	Same on all so-called permanent types	5	Bond required.
Buffalo, N. Y.	10			Bond required.
New York City:				
Manhattan	5	Asphalt block	5	City retains 10% of cost of pavement and foundation, also requires maintenance bond of 10%.
		Wood block	5	
		Granite block	1	
Bronx	5			If guarantee expires during winter months, it may be extended until inspection and repairs can be made, but not later than following April 15.
Brooklyn	5	Bituminous macadam	1	
		Granite block	1	
Queens	5	Granite block	1	
Rochester, N. Y.	5	Same on all types		Retain 10% of cost of the work; also require a maintenance bond of 10% of the cost of work.
Syracuse, N. Y.	5	Portland cement, concrete, brick and wood block	5	
		Sandstone and granite block	2	
Camden, N. J.	1	Same for all types		Requires bond 100% contract price.
Newark, N. J.	4	Same for all types		Requires maintenance bond of ¼ of the total amount of bid. In addition, city retains 5% of the total cost of the contract price. Two % paid contractor at end of 3rd year and 3% at the end of 5th year.
Paterson, N. J.				Plan a four-year guarantee.
Philadelphia, Pa.	3	Granite block	1	1-to 5-year period for work paid for wholly by city, and a 5-year guarantee on all pavements paid by assessment bills.
		Wood block	5	
		Vitrified block	5	
		Bituminous macadam	1	
		Portland cement concrete	1	
Reading, Pa.	1	Same for all types		Has been required for past 10 years.
Scranton, Pa.	5	Vitrified brick	5	Bond of ½ of the contract price required.
Wilmington, Del.				City does its own work.
Washington, D. C.	1	Same for all construction contracts		Bond of 25% of contract required.
Norfolk, Va.	5	Other types	5	Bond of 35% of bid remains in force for 5 years. Engineer is of opinion that time for guarantee is past.
Richmond, Va.	1		1	Increased to 5 years on many of largest asphalt projects. Difference in price 2 to 3 cents per sq. yd. for longer period.

MAINTENANCE GUARANTEE ON PAVEMENTS (*Continued*)

City	Guarantee Period			Remarks
	Asphalt Years	Other Pavements Types	Other Pavements Years	
Birmingham, Ala.	5			City requires bid on a price for 5 years' maintenance, but reserves right to accept until final completion of road.
New Orleans, La.	5	Brick Wood block Granite block	3 3 3	25 cents per sq. yd. is retained until the end of the maintenance period, on which 5% interest is allowed.
Nashville, Tenn.	1			Guarantee bond required.
Akron, Ohio	5	Other types	2	3% of contract price retained, on which is allowed 4% interest, also, Surety Co. is liable to extent of 50% of the contract price.
Cleveland, Ohio	5	Stone block Brick Wood block	3 3 5	Contractor must deposit in bank as maintenance security 27 cents per sq. yd. on asphalt pavements, 22½ cents on stone block, and 18 cents on brick, also give contract bond of 50% of bid
Columbus, Ohio	5			Interest paid yearly to contractor on deposited maintenance guarantee money.
Dayton, Ohio	5 or 3	Same on all types		Extends for a period of 3 years, providing 5% of contract price is left as a cash retainer, and for five years if a maintenance bond of 25% of contract is filed.
Youngstown, Ohio	5	Portland cement concrete	2 winters	Asphalt: Contractor shall give bond of 10 % of the contract, for the maintenance of pavement. Portland cement concrete: 5% is required.
Chicago, Ill.	0			Two-year guarantee period prior to 1923.
Detroit, Mich.	1 and 5			One year for 6″ base, 3″ sheet asphalt top. Five years for 8″ base, 3½″ sheet asphalt top. City contracts for no other type of pavement other than asphalt.
Grand Rapids, Mich.	5	Brick Reinforced concrete	5 3	Guarantee bond required.
Milwaukee, Wis.	3	Stone block Brick Concrete Wood block	3 3 3 3	City retains 10 cents per sq. yd. until the expiration of 3 years.
St. Paul, Minn.	5	Brick Creosote block Reinforced concrete	5 5 2	Portion of final estimate held in reserve for one year, also bond for 35% of contract price required.
Minneapolis, Minn.				City does all work by day labor.
St. Louis, Mo.	1		1	Contractor deposits $200 with city for year.
Kansas City, Kans.	1	Same for all types		Contractor's bond covers maintenance; 5 years is sometimes agreed upon between property owners and city commissioners.
Omaha, Nebr.	5	Stone block and vitrified brick Artificial stone and macadam	1 5	3% of contract retained for the period of guarantee in addition to maintenance bond.
Houston, Texas	5		5	Applies to all types of permanent paving. Require maintenance bond 10% of contract.
San Antonio, Texas	3 to 5	Same on all types		Maintenance bond of 25% required.
Denver, Colo.	5	All types same	5	
Salt Lake City, Utah	1		1	If end of period is after Nov. 1, it is extended to following April 15.
San Francisco, Calif.				No guarantee required.
Los Angeles, Calif.				No guarantee required.
Spokane, Wash.				Maintenance guarantee discontinued.
Seattle, Wash. Portland, Ore.	5	Same all types		Maintenance guarantee discontinued 1912.

If your city is not reported in the table above, The American City will be pleased to hear from you and publish your report in a later issue.

Town and College Join Forces in Recreational Program

By Margaret Kressmann

HOW a college town may cooperate with a higher institution of learning in planning a civic recreational program and making it operative so that both the children and the adult population have rational play and exercise, is shown by the experience of Eugene, Ore., the site of the University of Oregon. The town has a population of approximately 15,000. Although some efforts had been made, independent of the University, to provide a recreational program, it was not until city and college joined forces that the most satisfactory results were obtained.

BOYS AND GIRLS LEARN GAMES IN SUN PARLOR OF UNIVERSITY OF OREGON GYMNASIUM

The children were considered first. The School of Physical Education of the University announced that it would supervise the recreation of Eugene's children. Every Saturday morning, tens, scores, and finally hundreds, came to the Woman's Building and made use of the extensive equipment in the women's gymnasium under the eye of university women majoring in physical education. The work of supervising the children in games and sports came finally to be conducted by the class in playground management.

The classes took up kindergarten games and elementary work on the extensive apparatus. The kindergarten classes were held in the long, airy sun porch that runs along the south side of the gymnasium and provides a pleasant setting for the little games and stories.

The supervised play became so popular that the University Extension Division and the instructors in physical education for women worked out a plan with the school board whereby a college girl could visit the grade schools and take charge of recreational work one day of every week. The plan proved extremely successful. Student supervisors also directed community sings, orchestra practices, and pageant rehearsals.

EUGENE SCHOOL CHILDREN AT PLAY IN GYMNASIUM OF UNIVERSITY OF OREGON

While the Eugene children were obtaining this service, the University considered the program for adults. For years, the college plays, concerts, vesper services, and musical programs have been available to the townspeople. City and uni-

versity cooperation went a step farther.

A senior student in physical education, at the behest of the Dean of the school, made a thoroughgoing recreational survey of Eugene, noting what facilities it possessed and suggesting a new program. This student studied a great many programs of other cities before making the Eugene survey. The completed thesis was presented to the Mayor and City Council and is a basic contribution to future recreational developments in the city. The most important recommendations were the employment of an all-year recreation director by the city and the construction of a centrally located playground which could be used every day of the week.

A playground site on the Eugene Millrace was suggested. The Millrace is a comparatively quiet stream about 20 feet wide, flowing out of the Willamette River east of the city. Safe swimming and wading pools could be constructed along the Millrace, it was stated. The thesis pointed out to the Mayor and City Council that an excellent municipal bathing-beach could be constructed either on the Millrace or on the Willamette River.

Pending the fruition of a plan for complete recreational development in Eugene, the University continues to make available on a generous plan all of its equipment. The University men's and women's swimming pools are opened at certain hours during the week to townspeople. An expert teaches swimming to children and adults. The University battery of concrete tennis courts, which were constructed recently, are available at any time for the payment of a fee of ten cents an hour. A small club-house adjoins, where townspeople are privileged to obtain locker facilities. Later, a court of bowling and quoit-playing will be constructed and townspeople will be invited to make use of it. A three-hole golf course on the campus is open to everybody—faculty, students and townspeople alike—without the payment of fees.

The survey of Eugene's recreational facilities brought out many neglected opportunities for games and sports that had been overlooked. The student making the survey discovered that one of the city parks, only a few minutes' walk from the down-town business section, had been neglected. The recommendation was made that the city make use of the fair grounds not far from town, for field meets and other civic events.

The college town can make great strides in its recreational program through a plan of cooperation with the college or university within its municipal limits.

Better Lighting for School Buildings

SCHOOL buildings demand higher standards of lighting, it is asserted by the Eye Sight Conservation Council of America (Guy A. Henry, General Director), in a popular interpretation of the Code of Lighting School Buildings prepared under the joint sponsorship of the American Institute of Architects and the Illuminating Engineering Society. Advanced types of illumination are required in the school systems of towns and cities, it is said, because the immature eyes of school children are more susceptible to injury than the eyes of adults.

"There is no danger from too much artificial light," says the Council, "provided always the light is properly diffused and controlled, for daylight intensities are many times higher than the present highest practical intensities of artificial illumination. Experience has shown that there are certain minimum intensities of illumination which should be observed for eyesight conservation, and higher intensities are recommended as advantageous for best vision. In classrooms the intensity should not be less than five foot-candles, while the 'recommended' intensity is twice this amount, or ten foot-candles."

The foot-candle is a unit of measurement for the intensity of illumination. It is approximately the lighting effect produced by the light of a candle upon a surface one foot from the candle or of four candles two feet away or of nine candles three feet away. For a given distance away the illumination is proportional to the number of candles.

There is a wide choice of units which are suitable for school lighting provided they are properly selected and properly installed. Shades must be made of good diffusing glassware so that, without undue absorption, they will soften the shadows, adequately distribute the light and eliminate glare. Walls and ceilings must be properly finished and tinted. Finally, the equipment must be kept clean and in good repair.

"Another important consideration," the Council says, "is that light from artificial sources should be distributed as evenly as possible over the entire working space, which in the case of classrooms is the tops of the desks. The distribution of light should be governed by the simple rule that in no part of the space being lighted should the intensity of illumination be less than one-fourth that at the brightest point. In other words, at no point where the intensity of illumination is the highest should it be more than four times the value where it is the least. The foot-candle meter is invaluable for determining this ratio."

Blackboards, it is declared, should have a dull surface to prevent reflections, and should not be placed next to windows. Black slate has been found to be the most satisfactory material for blackboards, the walls surrounding which should not be white or very light-colored, as excessive contrast is tiring to the eyes

America Participates in International Congress of Cities

MUNICIPAL officials and others interested in city affairs from more than 300 communities in 36 different countries were in attendance at the International Congress of Cities held in Paris September 28-October 4. The cities and municipal organizations of the United States were much more adequately represented than at any previous gathering of the kind. The American delegation, three of whom were on the program, included Mayor William A. Magee, of Pittsburgh, Pa.; C. W. Koiner, of Pasadena, Calif., and John C. Stutz, of Lawrence, Kans., President and Secretary, respectively, of the International City Managers' Association: Mayor Richard F. Watson, of Greenville, S. C.; Dr. M. B. Herlong, City Commissioner of Jacksonville, Fla.; George B. Ford, city planner, of New York; Prof. Samuel C. May, of the University of California; Harold S. Buttenheim, Editor of THE AMERICAN CITY, and others, together with a group from Canada.

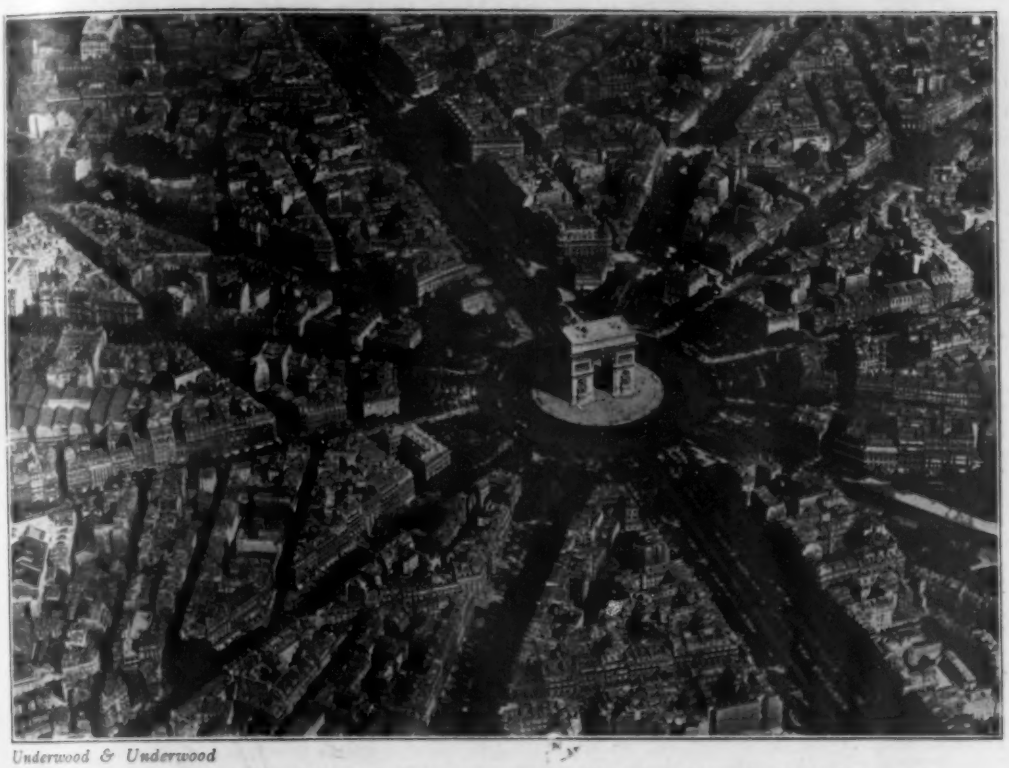
The program provided a well-planned balance between three days devoted to papers, discussions, and the business of the Congress on the one hand, and four days of study trips in Paris and environs on the other.

Among the most important reports submitted were those on municipal autonomy, by G. Montague Harris, of the British Ministry of Health; on land ownership by cities and its relationship to the housing problem, by Drooglever Fortuyn, Counseiller Communal of The Hague; and on the problems of metropolitan areas, by Henri Seiller, Counseiller Général of the Seine.

The study trips provided opportunity for inspection of several of the municipal activities and public works of the city of Paris, including the fire department, garbage incineration plant, and water-works, and visits

Underwood & Underwood

ESPLANADE DES INVALIDES, PARIS
Showing the banks of the Seine and the Exposition of Decorative Arts



Underwood & Underwood

THOROUGHFARES RADIATING FRORM THE ARC DE TRIOMPHE, PARIS

to some of the interesting garden villages in the suburban region of Paris. A day was devoted to a trip to Rheims, where the delegates saw the remarkable work of reconstruction now under way, including many street-opening and widening projects, in which the plans prepared for Rheims shortly after the war, by an American, George B. Ford, are being largely followed.

A very popular feature of the Paris meeting was a display of catalogs of American manufacturers of municipal equipment and supplies, arranged by THE AMERICAN CITY. The United States was the only country with an exhibit of this kind. It was evident, from the interest shown in this collection of printed matter, and from remarks made on the convention floor, that municipal progress in the United States is attracting world-wide attention and emulation.

Plans for Increased Service to the Cities of the World

It seems quite certain that the Paris Congress will result in making possible a service of increasing efficiency to the cities of the world. The Union Internationale des Villes, under whose auspices the Congress was held, is in reality an International Federation of Local Government Associations, and the latter name, at the suggestion of delegates from Great Britain and America, will hereafter be used to designate the Anglo-Saxon section of the organization.

A decision of importance to all English-speaking cities was the acceptance of a proposition from the International City Managers' Association whereby there will be published, beginning in January next, at the headquarters of that organization in Lawrence, Kans., an English edition of the digests of municipal literature heretofore published in French only at the Brussels headquarters. Brussels will continue to be the central office of the Union Internationale des Villes, under the able leadership of Senator Emile Vinck, Secretary General of the organization, and with the cooperation in Paris of Auguste Bruggeman, Director of the French Union of Cities.

Among other projects under consideration at the Brussels headquarters is an international municipal exhibition, which has been suggested by the Italian association, and which might subsequently be made available for display in various countries through na-

tional and state leagues of municipalities. The main object, of course, of the international headquarters is to serve as a central source of documentation and study of municipal problems, and to make available for cities throughout the world, through their local associations, the experience of cities in other countries. If adequate funds can be provided for such work, it is obvious that the International Federation of Local Government Associations can render a service of great importance as an international clearing-house of municipal information.

The next International Congress of Cities will be held in 1927, at a city to be selected by the general council.

EDITORIAL NOTE.—The Compagnie Aérienne Française, of Surennes, France, owners of the copyrights of the photographs reproduced with this article and on the front cover of this issue, are specializing in aerial photography for cities as an aid in the work of city planning, map-making, etc.

Improved Illumination in Pasadena

PASADENA, CALIF., is now claiming that it has the best illuminated street west of Chicago, as a new lighting system has just been completed along with other improvements, on East Green Street, which intersects the famous Orange Grove Avenue Boulevard at its west end. The total cost for 7,450 feet of improvement was more than a million dollars.

The lighting units used are of the latest type manufactured by the Westinghouse Electric & Manufacturing Company, George Cutter Works, South Bend, Ind. The standards are of the Arcadian type of cast iron, painted a bronze color and surmounted by a solid bronze octagonal lantern equipped with a Bi-Lux reflector and utilizing a single 600-candle-power street lamp. The reflector, the same as that used on Sheridan Road, Chicago, deflects the light beam at an angle of 22½ degrees with the curb. This results in an illumination intensity of 2,000 candle-power up and down the street, 500 candle-power directly in front of the post, and but 300 candle-power at the rear of the post or toward the property line where little illumination is desired.

The lighting system was designed by E. L. Bettanier, engineer of the Municipal Light and Power Company of Pasadena, assisted by C. E. Johnson, engineer of the Westinghouse Company. Standards are placed opposite at intervals of 115 feet, 2 feet back from the curb facing. The street width is 48 feet between curbs and 70 feet between property lines. Four posts at street intersections are placed 15 feet back from the intersecting streets, giving an average spacing of 90 feet between lights at intersections.

All utilities along the street are underground. Telephone, electric light and power lines are located in the roadway, and lateral services run to the property lines on both sides of the street. Water, gas, and sewer mains are situated under the sidewalks on each side of the street. The power and lighting conduits have been placed at an average depth of 3 feet below the surface of the road, which is paved with 7 inches of concrete faced with a 2-inch wearing surface. All conduits are lead-encased, giving adequate protection against moisture in any degree. Each post is equipped with a safety coil and disconnecting pothead placed in the base of the standard. Its function is to transform the high-tension circuit supplied through the underground mains to one of low potential, permitting only low voltages to enter the posts. This provides an added factor of safety in case of injury to the poles, protecting persons that may be near-by from coming in contact with high voltages.

The Public Library Should Render Enthusiastic Service to the Hospital

HOSPITAL service from the public library has come to stay! It is in line with the express desire and policy of public library officials to reach out and extend the lines of service of a public library to every corner of the community. The up-to-date, progressive public library has been seeking in every proper and legitimate way to take the library to the people and not wait for the people to come to the library. We have seen this in the establishing of branch libraries in the outlying sections of the city; in the placing of numerous deposits of books in schools, factories, shops and stores; in the use of book wagons, in both city and country districts; and in the use of the parcel post in placing books in the hands of patrons. In so doing, the public library has really become an active potential force which reaches out and touches and quickens the lives of individuals in the community.

In all these efforts to extend its usefulness the library is taking its wares to people who are physically able to go to the library for the assistance they require. If it is desirable to take the library to well people, is it not even more desirable to take its resources to the sick and afflicted who are unable to go themselves? I am far less concerned with any vindication of hospital service as a legitimate function of the public library, than I am with the way that it is carried on. There is absolutely no place for half-baked enthusiasm on the part of the administrative heads of our public libraries or those whom they place in immediate charge. Far better, in my opinion, that a library should not undertake this service at all than undertake it in any half-hearted way.

—From a paper by Clarence W. Sumner, Librarian, Sioux City (Iowa) Public Library, read before the A. L. A. Hospital Libraries Round Table, and published in the *Library Journal*.

Paving for Residence Streets--Part I

From a Memorandum Prepared by the Detroit Bureau of Governmental Research for the Mayor and the Commissioner of Public Works of Detroit at Their Request

IN the latter part of the past century and the early part of this one, the ideal pavement for all-round purposes was one that presented a good footing for horses, was easily cleaned, durable, quiet, and not easily disintegrated into dust or mud. For a time it was thought that the creosoted wood block was the ideal that met all these requirements for general traffic. Asphalt was next in order, but had the disadvantage of noise from the hoof-beats of horses. For heavy traffic, when great durability was the important factor, closely followed by security of good foothold for the horse, granite block and brick were prime favorites. These were designed for business streets where noise was least objectionable.

Motor traffic has changed these desiderata. A smooth riding surface, free from dust and mud, and not productive of skidding when wet, now presents the ideal.

Paving in the 90's

Prior to the late 90's, concrete of Louisville or other natural cements was used as a pavement base with some success. Between the base and the wearing surface, whether it were brick, granite, or wood block, there was generally a sand cushion. Asphalt was laid directly on the base as now. Under the conditions of traffic at that time, the maintenance problems in city streets were, as now, principally created by corporation cuts.

The paving media used as surfaces then were (1) granite block, (2) asphalt, (3) brick, (4) creosoted wood block, (5) cedar block, (6) macadam, (7) concrete, (8) asphaltic concrete. The changed traffic conditions have shown the inadequacy of the pavements as constructed then, and for urban and interurban highways have largely eliminated the creosoted wood block, on account of its slipperiness and the difficulty in laying it properly, beside the expense.

As the heavy traffic of wholesale districts is not to be considered in this discussion, pavements for such use will not be discussed further, nor will the others that are prohibited by their expense.

Difficult to Condense

The matter of proper paving is so important that a large volume would not include all that might be said for and against any particular material as a paving medium. In a brief memorandum, however, it seems desirable to give a statement of some of the problems that have presented themselves, their possible solutions, and the changes forced on engineers by the revolution that has taken place in vehicular traffic within the last two decades.

Asphalt

The issue in Detroit is limited to the choice between concrete and asphalt. As is usual, there are many enthusiastic proponents of each.

The reasons for the use of asphalt are many and the objections to its use are comparatively few. The principal objection from the economic standpoint has been the fact that for many years the natural asphalt output has been controlled and competitive bidding has been a form only. The opening of city specifications to oil asphalts has changed this situation.

The advantages are the ease of laying and ease of repair; the durability of the wearing surface; the ease of cleaning; its water-shedding qualities; its comfort as a surface for riding; dustlessness, and comparative cheapness. The esthetic sensibilities, a consideration in regard to urban pavements, are not wounded by the repairs to an asphalt pavement, which cannot be said of most of the others. There is no glare. All in all, the most satisfactory medium for modern traffic is found in this pavement.

Concrete

The first considerations in the selection of the type of pavement are its initial expense and maintenance costs. Because of the usual presence of gravel or limestone and sand, the standardization of portland cement, and the fact that concrete may be mixed and placed by common labor, it is obvious why concrete has made such tremendous strides toward universal adoption for county highways.

Ezra Shoecraft, of Hoad, Decker, Shoecraft and Drury, has recommended that the

city of Cincinnati adopt concrete as the standard pavement for outlying residential streets. There are conditions in Cincinnati that warrant such a recommendation. Cincinnati's growth in the past twenty years has been subnormal. A quiet outlying residential street of twenty years ago is still that. The outlying residential street in Detroit twenty years ago is now well inside the Boulevard, and the outlying street of to-day will be subject to a considerable amount of hauling for building purposes for some time. And yet it is possible that there are parts of Detroit in which a concrete pavement would be quite satisfactory.

Except in an experimental way, the use of concrete as a single-course pavement was begun in the United States by the Wayne County Road Commission, about fifteen years ago. This practice has varied between the one-course and the two-course concrete pavement, and for highway work is proving equal to any.

The advantages of concrete construction are obvious. Gravel or limestone is generally available within a very short hauling radius and offers the cheapest medium almost universally; the actual processes of manipulation are practically all done by machinery, so skilled labor is limited to the few machine operators that are employed, thus cutting labor costs.

The corporation cut is an unknown factor in country highway maintenance, and the repairs that are inevitable are easily made—by hot asphalt for cracks, cold patches for more serious emergency repairs, or cutting out and reconcreting. However, the repairs usual in concrete roads are unsightly and are an objection in city streets where sightliness is a factor in the consideration of any improvement.

The alternatives for county roadways are: brick, which is much used in some states; macadam, either water-bound or asphaltic; and gravel roads. The latter two have little or no place in the improvement of a modern city of size, and brick has become discredited as a city paving medium hereabouts on account of its uneven wearing qualities and ultimate roughness.

Concrete in City Pavements

As a surface for city streets, as well as a base, concrete has been used on a total of upwards of 12,000 miles of city pavements throughout the country.

The early attempts made in Detroit were made in 1913-14-15 by the Thomas System of Reinforced Concrete. Reinforcing steel was laid both longitudinally and transversely. Asphaltic concrete was also laid during these years. After about 1916 or 1917, no concrete paving was laid until the summer of 1923, when about three blocks of vibrolithic pavement were laid on the north side of Gratiot Avenue. In this no reinforcement was considered necessary. The concrete is laid somewhat dryer than has been usual in Detroit and brought to a grade. A grillage of slats is laid over the fresh concrete, and small gas-actuated engines equipped with eccentric flywheels are rolled over the grillage. The vibration impacted to the grillage compacts the concrete, drives out excess water and air bubbles, and floats enough mortar to the top to provide a troweling surface. Before the latter is done, however, crushed granite about 1½ inches in diameter is spread on the top surface and is thoroughly incorporated in the concrete. As the object of the granite is to present a harder wearing surface, and as the cement finish is not expected to last forever, the results are as good as may be expected of an un-reinforced concrete.

Resurfacing and Repairing

The great difficulty in connection with concrete work is in connection with resurfacing. This is due to the uncertainty of bond between the old and the new concrete. In many cases, this must result in a "sliver"—that is, a very thin layer of new concrete laid over the old. The results of this practice are invariably unsatisfactory. The Wayne County Road Commissioners claim to have successfully resurfaced concrete roads.

The esthetic considerations must be given due weight in urban residential sections. Whereas a county highway is deemed satisfactory if it presents a reasonably smooth surface regardless of looks, a city street presenting a steady glare mottled by unsightly daubs of asphalt or tar, and checkered by multi-colored patches, is quite another matter, as it is a part of the setting of a great number of homes.

Experience on Detroit Streets

A number of days were spent in looking over the pavements laid in 1913-14-15-16. As previously indicated, this concrete was laid under the trade name "Thomas System of Reinforced Concrete." Whether another firm was doing work with a different reinforcing system, I have been unable to ascertain. How-

ever, two kinds of reinforcement were used, as is evidenced by the presentation of two different kinds of reinforcing metal at the present surface of the streets, as well as by specifications.

The Thomas System proper consisted of a double grillage of ⅜-inch round reinforcing bars, one at the bottom and the other very close to the surface, held apart by short angle-irons. In the earlier attempts, expansion joints were too far apart. In the later jobs these joints were placed about 30 inches apart. In all of the early jobs, the pavement is cracked at least once, longitudinally. Generally there are two cracks, practically parallel, about one-third of the transverse dimension of the street. While some of the pavement might serve as a base, most of it is so shattered now that it should come out.

Instead of using the ⅜-inch round reinforcement throughout in Lawton Avenue, a triangular mesh wire was used. In all of the pavement visited there seems to be a relation between the cracks and reinforcement. In all streets the top steel was placed too near the finished surface, and as soon as this is exposed, the rusting of the steel accelerates disintegration.

Vibrolithic concrete is as dense and durable as concrete can be laid and with the granite surface seems indestructible. Inspection of the pavement in question shows cracks radiating from one manhole. In the line of traffic nearest the tracks the raveling of the concrete has taken place at a rate that has been quite surprising. Adjacent to the Detroit Street Railway tracks traffic has broken into the concrete in several spots, producing conditions that soon will be dangerous.

The asphalt surface on the south side of Gratiot and east and west of the area in question is as smooth and in as good shape as on the day it was laid. The concrete will require maintenance this year. The asphaltic concrete laid at about the same time will apparently run a couple of years more at the least without attention. Later inspections in other parts of the city bear out the facts substantially as above.

A marked difference in the asphaltic concrete and the reinforced concrete pavements lies in the fact that the surface of the former is cracked less often. There are plenty of evidences of failure in the base, and depressions of considerable depth and area are not infrequent, but the surface fits such conditions without rupture. This flexibility of surface keeps out the natural elements making for complete disintegration.

In concluding this phase of this memorandum, I wish to include some excerpts from a paper recently read at a meeting of Road Builders in Ann Arbor by Professor A. H. White, Professor of Chemical Engineering:

"Our best index of permanence is constancy of volume. . . .

"The lineal expansion and contraction of cement products may be measured with considerable accuracy if they are made into small test bars 1 inch square and 4 inches long with glass plates in the ends. The initial measurement is made when the bar is removed from its mold, usually after 24 hours, and any subsequent changes are measured as variations from this initial reading. . . . This bar has been in water continuously for 23 years. . . . It expanded steadily but at a decreasing rate, as is shown in the table:

EXPRESSED IN PERCENTAGE CHANGE FROM ORIGINAL LENGTH

7 days	plus 0.030
28 days	" 0.055
2 months	" 0.080
6 months	" 0.090
1 year	" 0.100
2 years	" 0.136
5 years	" 0.144
10 years	" 0.150
15 years	" 0.162
20 years	" 0.161

"A linear expansion of 0.16 per cent may seem small, but when it is expressed as 1.93 inches per hundred feet it gives a clearer comprehension of the expansive force which may result. . . . The external pressure developed by this expansion of rich mortars is the cause of pressure ridges and upheavals. . . . The magnitude of the force required to neutralize the expansion of this bar . . may be approximately calculated from the modulus of elasticity for neat cement. If this bar had been rigidly fixed so it could not have expanded, it would have exerted a pressure of 75,000 pounds per square inch on the restraining ends at the expiration of the ten-year period. Two-thirds of this pressure would have been developed in the first year.

CONTRACTION OF CEMENT PRODUCTS IN AIR

". . . The stiff colloidal jelly which is such an important part of the products formed during the hardening of cement, behaves like clay or glue, in that it shrinks when it is dry and swells when it becomes wet. . . . The shrinkage in air is from two to three times as great as the expansion in water at the same period. . . . It is this shrinkage of the colloid of the cement which causes . . . cracks.

"Concrete will always shrink when it becomes dry, and the richer the mix, the wider will be the cracks. The remedy is to use a lean mix where strength is not required . . . and to use adequate reinforcement if it is necessary to prevent cracks in richer mixtures. . . .

"If the cement is maintained in a constant condition of wetness or dryness, constant dimensions are finally reached. . . . It is not possible to say whether these products ever lose their colloidal property, but experiments show that they

retain it unimpaired for at least twenty years.

SECONDARY CAUSES OF DESTRUCTION OF CONCRETE

"Expansion and contraction due to temperature is always a secondary cause of cracks. The change from winter to summer temperature may be considered as involving a change of 100 degrees F., or an elongation of 0.055 per cent. . . . About one-third of the expansion . . . when it changes from the dry to the wet state at constant temperature. . . The greatest expansion . . . will be found in hot and wet weather. The expansion in cool but wet weather is usually greater than in hot but dry weather.

"Frost is an important secondary cause of the disintegration of concrete . . . concrete when properly made contains practically no liquid water . . . colloid water does not expand on freezing. Sound concrete is therefore not harmed by freezing even when soaked with water. As soon, however, as even a hair crack appears in concrete, a gap is formed which permits liquid water to enter and freeze. The pressure of the ice formed increases the width and depth of the crack and through this ever widening door disintegration proceeds at an accelerating pace. Even hair cracks must be prevented if disintegration is to be avoided when concrete is exposed . . . where ice may form.

"Another secondary cause of disintegration is the corrosion of steel embedded in the concrete . . . . cracked concrete does not protect the steel at all.'

(To be continued in the December issue)

Santa Monica's Rebuilt Water System

By M. G. Ellis

Deputy Water Commissioner, Santa Monica, Calif.

THE cities of the southern portion of California have peculiar conditions to meet as regards water-supply. There are few flowing streams from which they can draw a supply; consequently, almost all water for domestic and irrigation purposes must be pumped from wells. This condition applies to practically all communities in southern California, except the city of Los Angeles, which has its aqueduct bringing water from the high Sierras. During the last few seasons, which have been unusually dry, population has been increasing at a tremendous rate, resulting in a heavy drain upon the underground water resources, and watersheds have been burned off by brush fires, which, with light rainfall, has prevented the replenishing of these resources. In many cases, shallow strata of underground water have been entirely depleted, and it has been necessary to go deeper and deeper to secure satisfactory flows.

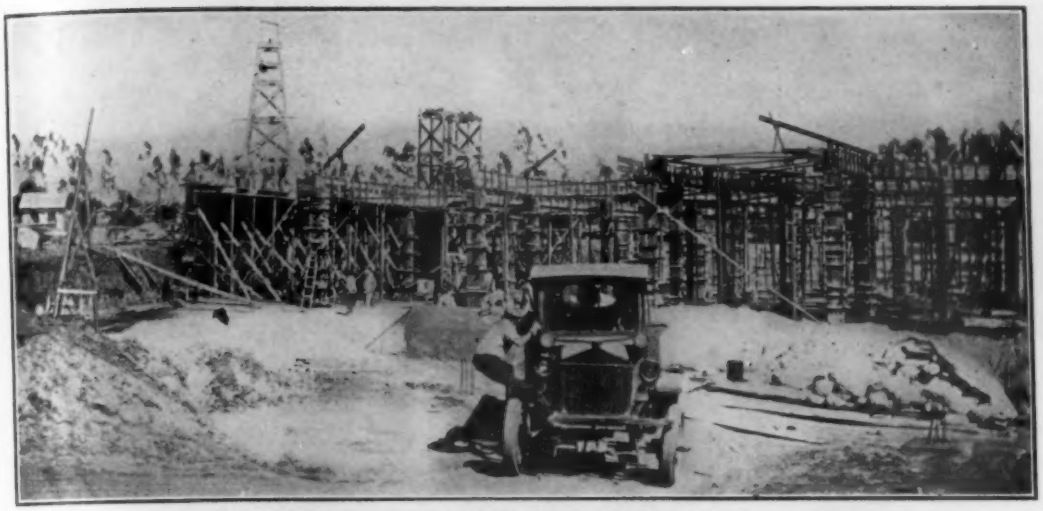
The census of 1920 gives the population of Santa Monica, Calif., then a small city, on the Pacific Ocean, 15 miles from Los Angeles, as 15,252. Since that date, this community has shared the phenomenal growth of southern California, and has changed it from a comparatively sleepy beach resort to a very lively metropolitan center with its office buildings, hotels, industrial district, and extensive residential sections. Conservative estimates made by public utilities place the present population at approximately 40,000.

Water-Works Purchased by City

The water system, municipally owned, and conducted under the jurisdiction of the Commissioner of Public Works, was, until 1924, a loosely connected system of pipes, having its nucleus in the property of four privately owned and independent water companies. In 1916, at the time the voters of Santa Monica authorized a commission form of government, these four private companies were bought out by the newly organized commission, and the four systems merged into one.

FLOW OF FIRST WELL IN NEW WATER BEARING TERRITORY

Each year, with the added growth of the community, it became more and more apparent that the water system



THE ARCADIA RESERVOIR IN COURSE OF CONSTRUCTION

was inadequate. Sources of supply were not dependable, as the wells tapped only the shallow strata, which, in this section of California, produce very little water. Reservoirs and transmission and distribution mains were small. Much of the pumping equipment was in poor condition, resulting in high operating costs. Conditions became more and more acute, until toward the end of the year 1923, at which time the three City Commissioners, sitting as a Council, authorized the employment of a firm of consulting engineers to make a survey of the existing system, and recommendations for necessary improvements to provide an adequate source of supply, adequate storage, and comprehensive zoning and distribution arrangements.

The firm of Olmsted & Gillelen, of Los Angeles, was employed. After a careful study of the existing conditions, a complete report was made, recommending the purchase of water-bearing land in new territory, the drilling of wells, the construction of two reservoirs, and the laying of additional transmission and distribution mains.

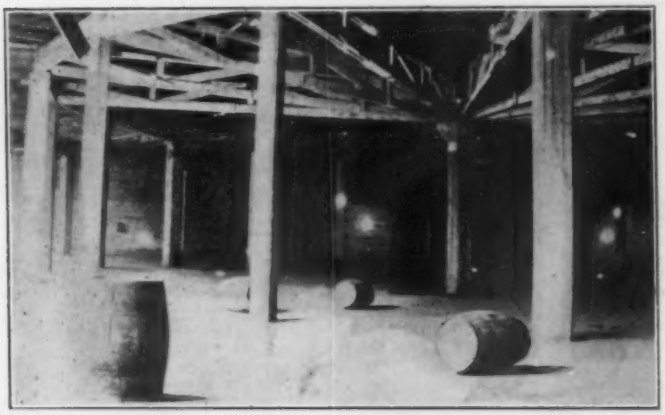
Bond Issue Authorized

In December, 1923, the voters authorized a bond issue of one million dollars for these betterments. After several months of delay, due to legal technicalities, contracts were let, and work on the various improvements was begun in the spring of 1924. At the end of ten months the improvement program was practically complete.

The Elrod Engineering Company, of Dallas, Texas, and Santa Monica, Calif., supervised the betterments in the capacity of consulting engineers. Claude Fisher, contractor, of Los Angeles, laid all pipe lines. J. L. Schimmer & Company, of Santa Monica, was awarded the contract for constructing the reservoirs. Deep-well turbine pumps were furnished by the Pacific Pump Works, of Los Angeles, and booster pump equipment by Fairbanks-Morse & Company.

Development of New Source of Supply

Perhaps the most interesting feature of the improvement program was the development of a new source of supply. A most careful study was made of the topography of the land in the city and within the radius of a good many miles outside of the city limits. Logs of many existing wells were obtained and examined, with a view to determining the geological formations. Finally a tract of land was selected at a point about 2,000 feet east of the southeast city limits, lying at the base of the Los Angeles watershed and adjacent to the so-called Ballona Creek watershed. An 18-inch test well was drilled to a depth of 388 feet, and pumped with air for a short time, and was then equipped with a six-stage Pacific deep-well pump directly connected to a 75-h.p. motor. The initial output of this well was 1,575 gallons per minute. The best producing well of the old system was capable of only 500 gallons per minute, indicating the high type of water-bearing land the department had secured. Shortly after placing this well on production, another was drilled a few hundred yards away, and similarly equipped, which produced approximately the same amount of water without affecting the first well. A third well is being drilled. The Water Department is convinced



INTERIOR OF MT. OLIVETTE 2½-MILLION-GALLON RESERVOIR

that it has now in its possession a practically inexhaustible supply of pure, wholesome water secured from a depth that precludes any possibility of contamination.

Taking all the pumping plants into consideration, and eliminating consideration of the proposed well, the capacity of the sources of supply is about as follows:

New Charnock plant, 2 wells, capacity 3,125 g. p. m.
Hatch Street plant, 5 wells, capacity 2,900 g. p. m.
Arcadia plant, 6 wells, capacity 1,840 g. p. m.

The total capacity is 7,865 gallons per minute, or approximately 11,300,000 gallons per day if operated continuously. In addition, there is one small auxiliary plant capable of producing 500 gallons per minute which is not in service, but can be used in case of emergency. The average consumption is 3,150,000 gallons per day, and the maximum consumption 3,800,000 gallons per day. It is therefore evident that there is now abundant water to provide for the growth of the community for a considerable number of years.

Pumping and Distribution Zones

There are twenty buildings housing pumps. All the pumping equipment is electrically driven. The pumps are operated only the minimum number of hours necessary to keep the reservoirs full. Each plant is equipped with a covered settling basin or sump into which the water is pumped from the wells before being lifted to the various reservoirs to be served by gravity to the consumer.

On account of the varying altitude, ranging from a 10-foot elevation on the Ocean Front to 345 feet at the easterly city limits, it has been necessary to divide the city into four zones for water distribution purposes, each served by a reservoir at the proper elevation. Zone 1 includes the Ocean Park and beach district with an average elevation of 40 feet. This section is fed by a 14-inch main leading from the Pearl Street reservoir, a reinforced concrete reservoir, 16 feet deep and 100 feet in diameter, at an elevation of 150 feet with a storage capacity of one million gallons.

Zone 2, including elevations of from 50 to 140 feet, is served from the Arcadia reservoir, a part of the new system built in 1924, of reinforced concrete. This reservoir is 14 feet high and 250 feet in diameter and has a storage capacity of 5 million gallons. The elevation is 256 feet.

Zone 3 is served by two reservoirs at an elevation of 350 feet. One of these is an old circular concrete reservoir, a portion of the old system, with a capacity of 1½ million gallons. The other, of similar construction, was built in 1924 and has a capacity of 2½ million gallons. These are known as the Mount Olivette reservoirs.

Zone 4, the very highest section of the city, is served from an elevated tank with a capacity of 100,000 gallons. This tank is connected to, and filled from, the two reservoirs just mentioned in connection with Zone 3. The booster pump filling it is controlled by an automatic electric device which starts the pump when the water-level in the tank recedes to a certain point, and shuts it off when the tank fills.

The total reservoir capacity is 10,100,000 gallons, exclusive of the holding capacity of the mains. All the zones are directly connected, and by the manipulation of a few valves it is possible to throw the entire water-supply into the Ocean Front business and amusement district in the case of a serious fire. The reservoirs are filled by booster pumps connected to the sumps at the pumping plants.

Distribution System

Transmission or supply mains are considered quite ample to provide for a population greatly in excess of what it is at present. Running from the new Charnock Road plant to the Arcadia reservoir, there is a 20-inch wood pipe line. From this reservoir there is a 24-inch cast iron main leading to Zone 2, reducing gradually to 20 inches, and then to

16 inches. From the Arcadia plant to the Olivette reservoirs there is a 12-inch main for supplying these reservoirs, which in turn feed out through 24-inch and 20-inch mains into Zone 3. From the elevated tank a 10-inch main leads into Zone 4. All mains in the different zones are cross-connected at intervals of about 3,000 feet, and controlled by gate-valves.

There are in the system about 614,000 feet of pipe, 177,000 feet of this having been laid during the past year under the bond issue for that purpose. Of this new pipe laid, 37,000 feet is Class "B" cast iron pipe, 133,000 feet De Lavaud cast iron pipe, and 5,000 feet Redwood pipe. The old pipe consists of various kinds, principally standard screw, cast iron and O. D. casing. There is also about 8,000 feet of riveted steel pipe. There are approximately 625 fire-hydrants well distributed over the city.

Services 100 Per Cent Metered

The water system is 100 per cent metered. The rate to consumers is 15 cents per 100 cubic feet for the first 2,000 cubic feet, and 10 cents for each 100 cubic feet above 2,000. Bills are mailed the first of each month and are payable on or before the 20th. There were on January 1, 1925, 7,250 water consumers on the books of the Department. Sales of water for the calendar year 1924 aggregated $175,641.60.

The Water Department is conducted under the active direction of John A. Morton, Commissioner of Public Works; W. W. Stephens, Superintendent, and M. G. Ellis, Office Manager and Purchasing Agent.

Bathing-Beach Water Made Safe by Chlorination

THE following item that appeared in a summer issue of the *Weekly Health Review* of the Detroit Department of Health, under the heading, "Water at Belle Isle Bathing-Beach Now Safe," is of permanent interest:

"During the latter part of June and the first part of July the water at Belle Isle Bathing-Beach was found to be grossly polluted. Most of the colon counts were of 1,000 per 100 c.c. The public was warned of the possible danger and the Health Department immediately took steps to remedy the situation. That the steps taken have been successful is indicated by the following table showing the reports of water samples taken at the beach before and after chlorination:

BELLE ISLE BATHING-BEACH WATER SAMPLES

	Total Bacterial Count	Colon Count per 100 c.c.
Average of 22 samples taken before chlorination	708	300
Average of 87 samples taken after chlorination	32	10.4*

*This includes three counts of 100 obtained on July 25 when the chlorine apparatus was working only part of the day. Disregarding the samples collected on that day, of which there were 12, gives an average color count of but 7.7.

"The ordinary means of swimming pool sterilization, such as the use of a chlorine boat, the ultra violet ray, or the introduction of chlorine at a given point, could not be utilized on account of the current of the river. The fact that any given amount of water reaching the beach would pass by and beyond that portion used by the bathers in less than two minutes meant that some system of continually treating all the water which reached the bathers was necessary. This was accomplished by placing four liquid chlorine tanks about fifty yards up-stream from the bathers and hooking them up in series with common ¾-inch garden hose, the total length of which was 300 feet. The hose was fitted with four millimeter glass pet-cocks placed at three-foot intervals, placed on the bottom and anchored there. In order to prevent the hose from rising when the chlorine was turned on, it was necessary to place anchors at about ten-foot intervals. The water covered by the chlorine line ranges from a little over six feet at the deep end to about eighteen inches at the inshore end. The chlorine tanks are turned on with the appearance of the first bather in the morning and are kept operating until the last bather has left at night. The cost of the chlorine used amounts to approximately $8.00 per day. While the arrangement just described is admittedly a rather crude one it does show that it is possible to effectively treat a bathing-beach where there is a considerable current, providing all the water reaching the beach is made to pass over a continuously operating chlorine line. Obviously, the swifter the current the more chlorine it is necessary to use and the closer together the pet-cocks must be placed."

Municipal Theaters Increasing

THAT the municipal theater idea is becoming increasingly popular in this country is evident from a recent item in the *New York Times*, which reports activities along this line in a number of our larger cities.

The seventh municipal theater season of light opera in Forest Park, St. Louis, ended on August 15 last with the performance of "The Merry Widow," the twelfth production of the summer, and a season of grand opera opened on August 20. The city of Cleveland sent its Commissioner of Parks to study the situation in St. Louis, with a view to erecting a municipal theater in Cleveland similar to that in Forest Park. Memphis gave its first season of civic opera this last summer, and Salt Lake City presented its second annual civic opera in August (p. 529). In Los Angeles and San Francisco municipal grand opera seasons opened in September, and in Dallas the matter of organizing a civic opera company is being discussed.

Fire Protection for the Small Town

By J. Newton Van Zandt

The Motorized Fire Department of Shawnee, Oklahoma, Is Recognized as a Paying Investment

THE menace of fire must be confronted by all cities, but the most favorable condition for its ravages is probably in the small American town with a population from ten to twenty-five thousand—a town that has outgrown the bucket squad, and where the taxpayers feel that they cannot afford an efficient fire-fighting force.

It is a serious problem with which these towns must cope. One of the most outstanding issues, from the civic standpoint, is whether it will be a paying investment to provide fire equipment with modern facilities, or better to struggle along with inferior equipment.

Shawnee, Okla., belongs in the small-town class. But Shawnee has taken the step to a better fire department and is now highly pleased with the results. The department was first organized in 1892 on a volunteer basis, with equipment consisting of an old hand reel and hose. It was reorganized three years later as a part-paid organization, and the equipment was one team of horses with 2,000 feet of hose hauled around in a discarded furniture wagon. More supplies were gradually added as the town became larger, but it was far from a complete fire-fighting force in 1918.

When the town was only a village, a serious fire was impossible because there were no large buildings or valuable property within the city limits. But after the town had grown rapidly for a number of years and many large buildings and valuable property had been added, a fire destroyed more than a half-block of the main business section. The flames could not be checked with the limited amount of hose and without special equipment. The loss by that one fire helped greatly to convince the people that a properly equipped fire department was necessary. Insurance rates were eating up the profit of the business men. Their merchandise was constantly in danger of being destroyed, should a fire break out in their neighborhood.

Frank W. Watts, who was Mayor of Shawnee from 1918 to 1920, realized the peril that constantly threatened the city, and he fostered a move to vote a bond issue of $100,000 to install a modern fire department. Under the impetus of past disasters, the bond issue was passed, and the next problem was the planning of a fire department that would be best adapted to the needs of the city.

THIS WAS ONE OF THE LARGEST FIRES EVER HANDLED BY THE SHAWNEE FIRE DEPARTMENT—THE BURNING OF A COTTONSEED MILL

The main business and residential sections of Shawnee are included in the general outline of an L, with one end pointing east and the other protruding about two miles north. The central station, Number 1, was placed in the heart of the business section, and three substations were located in the residential sections of the city. One substation was placed about half-way between the central station and the outskirts of each end of the L. Another substation was placed at the extreme bottom of the L, which is across the railroad tracks that separate that section of the city from the main part of town. It was placed there to afford instant protection to the railroad shops and grain mills, located in that part of town. The substation plan makes it possible to reach a fire which starts in any part of the city, with a minimum loss of time.

ONE OF THE SUBSTATIONS OF THE SHAWNEE FIRE DEPARTMENT, WITH MODERN APPARATUS

Equipment was the next problem to be considered. The larger business houses were from three to five stories high. Equipment must be provided so that flames in any part of the buildings could be reached and fought easily.

Four 110-horse-power American-LaFrance fire trucks, three of which have special motor-driven pumps in connection that will force 750 gallons of water each minute through a fire-hose and throw it 100 feet in the air, were purchased for the department. A ladder truck with a 75-foot aerial was included in the equipment. Special apparatus to handle all kinds of conditions was supplied: goose-neck nozzles that will reach under floors where it would be impossible to fight flames with an ordinary straight nozzle; pumps with which the entire basement of a building can be flooded in a few minutes; special nozzles through which a stream of water can be sent with great force.

The length of time required in putting out a fire depends, of course, on how soon the alarm is turned in, but it is a rare occurrence for any building to be a complete loss in Shawnee. If a fire has not made too much headway, it is extinguished with chemicals, thereby saving damage to the furniture which would result from the use of water. Any place within the city limits can be reached in five minutes after the alarm reaches the station, and the average on both long and short runs is from two to three minutes.

All fire-alarms go in at the central station, which notifies the station in the vicinity of the fire. The truck from the substation makes the run to the fire along with the truck from the central station. Another truck from one of the other stations comes to the central station to protect against damage from another fire breaking out in some other part of the city at the same time. Under this plan one truck is held in reserve at all times.

After five years of active service, the question of whether it pays to have an efficient fire department gets a strong affirmative answer in Shawnee. The saving each year on fire loss and insurance rates is considered more than enough to pay the complete cost of the original bond issue required to provide the department.

A specific case of saving can be given in regard to the Rock Island railroad shops, located at Shawnee. In the summer of 1924 the shops were partially destroyed, with a loss of a quarter of a million dollars. Only the modern equipment of the Shawnee fire department finally enabled the firemen to extinguish the flames and prevent them from completely destroying the shops, which are valued at more than a million dollars. Again, in the summer of 1925, the shops caught fire and the flames were reached and extinguished before they had made much headway, and only a slight damage resulted. While it is sometimes impossible to save a house which is already aflame, loss to adjacent buildings has been almost entirely

eliminated by this efficient service.

Since the installation of the modernized fire department in Shawnee, firemen must qualify for positions in the department. They are put through vigorous fire-drills and are kept physically fit, and trained in the proper methods of combating flames. Active campaigns are fostered by the Fire Chief among the citizens and school children, for the elimination of fire-traps.

The Traffic Officer and His Hand Signals

The Physique and Intelligence of the Officer—Hand Signaling Should Be Clear and Uniform

IN his recently published book on "Street Traffic Control,, Miller McClintock, Ph. D., Consultant to the Los Angeles Traffic Commission, states that in building up a good traffic squad the personal equation is the first which must be considered. Height is particularly desirable. The officer who controls an intersection is often surrounded by pedestrians who block his view unless he is able to see over their heads. Height, moreover, adds to the effectiveness of his signals. Vigor and snap on the part of the officer result in greater speed and certainty of vehicle and pedestrian movement. The traffic officer should also have good judgment and discretion. The freedom of movement and the safety at the intersection depend on a head that can keep cool in any emergency.

Dr. McClintock emphasizes the fact that, notwithstanding the introduction of semaphores and signal lights, the hand signal must remain an important method of communication between the officer and the public. The rapidity and safety of traffic flow depend to a considerable extent upon the uniformity, visibility, and clarity of these directions. In some cities it is necessary to learn the peculiarities of each individual officer before one can drive with safety.

In the opinion of Dr. McClintock, the best hand signals yet designed are those originated by Captain Bernard J. Hoppe of the Boston Traffic Police and now in use throughout the metropolitan area of Boston. For the photographs here reproduced THE AMERICAN CITY is indebted to Michael H. Crowley, Superintendent of Police, of Boston, and to the *Boston Daily Globe*. In his book* Dr. McClintock quotes the directions and comments on them as follows:

"It will be noted in the following directions that all movements are executed above shoulder heights, thus giving them the greatest possible visibility. At noisy intersections the signal is immediately preceded by a whistle to call the attention of drivers and pedestrians to the fact that a change in traffic is to take place. In the training school the signals are given as a manual of arms, and every recruit must know them perfectly before he is given duty. It is to the uniformity and precision of these directions that much of the regularity and certainty of vehicle flow in Boston can be attributed.

"To Stop Traffic from the Right: Turn the body slightly to the right, look over the right shoulder, raise right arm at an angle of 45 degrees, palm of the hand toward the vehicle to be stopped. Hold until signal is obeyed.

"To Release Traffic from the Right: Look over right shoulder, raise arm at an angle of 45 degrees, palm front, and swing arm to the left across face.

"To Stop Traffic from the Front: Raise left arm at an angle of 45 degrees to the front, with palm toward the vehicle to be stopped. Hold until signal is obeyed.

"To Release Traffic from the Front: Raise left arm at an angle of 45 degrees to the front, with back of hand toward the vehicle, and swing hand back over left shoulder.

"To Stop and Release Traffic from the Left: Same as from right except executed with the left hand.

"To Warn Pedestrians Right and Left: Raise both arms horizontal with shoulders, palms toward the pedestrians.

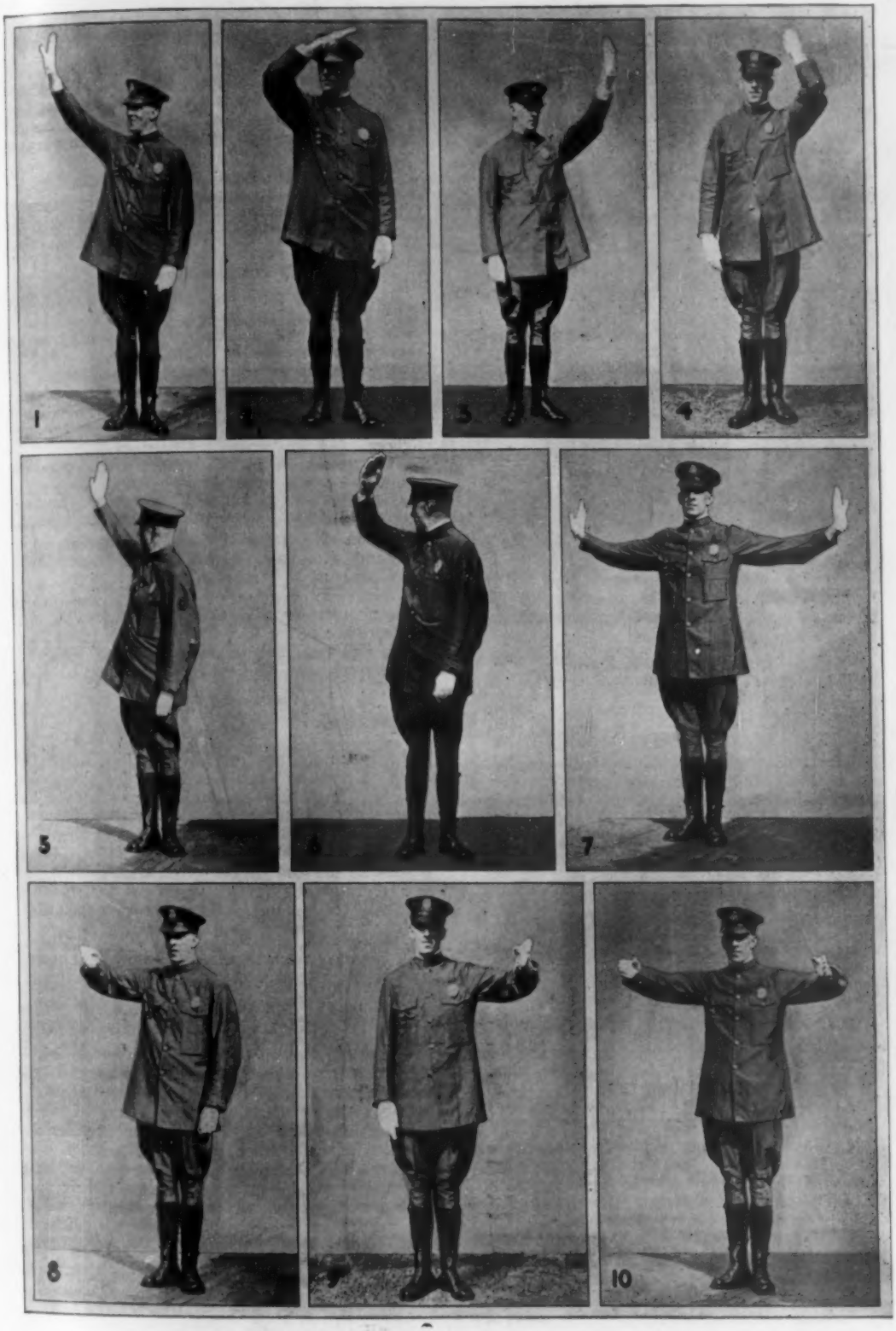
"To Release Pedestrians Right and Left: Raise both arms horizontal with shoulders, palm front, and swing arms across chest.

"The traffic officer's task is no longer one that can be carried out successfully by the casual police officer or the untrained amateur. Several of the larger cities of the country have taken the lead in raising the position to one of expert and professional standing. So far as results can be judged at present, the change is working for greater safety in our streets and at the same time for their more efficient use by the public."

HAND SIGNALS SHOWN ON FACING PAGE

1. Stopping traffic on the right
2. Releasing traffic on the right
3. Stopping traffic on the left in front
4. Releasing traffic on the left in front
5. Stopping traffic in the rear
6. Releasing traffic in the rear
7. Stopping pedestrians on the right and left
8. Releasing pedestrians on the right
9. Releasing pedestrians on the left
10. Releasing pedestrians on the right and left

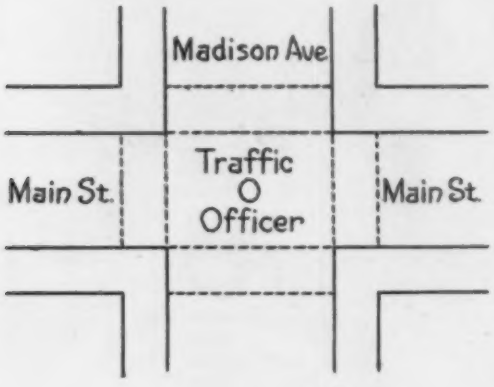
*Published by the McGraw-Hill Book Company, New York. See THE AMERICAN CITY for July, 1925, page 97.



HAND SIGNALS USED BY THE BOSTON TRAFFIC POLICE
Directions indicated by posture 1 to 10 are listed on the preceding page

A Traffic Game for Children

A GAME to teach children to observe and obey traffic signals, issued by the Memphis Safety Council:



Ground

Lines are drawn to represent a section of a highway and a crossing. May have sidewalks and street-car tracks—to be modified or elaborated to suit conditions.

Lines may be drawn with a pointed stick or with lime when playing out of doors—with chalk when playing indoors.

Players

Appoint one player (familiar with traffic signals) for Traffic Policeman—2 players for the Fire Engine (one player to stand behind the other with his hands on the first player's shoulders). The Fire Engine comes when least expected—but not too often, as the game becomes more familiar to the group.

Players may be selected to represent street cars going in opposite directions on tracks. The players of each street car stand back of each other with hands on shoulders of the player in front—same as the Fire Engine.

The rest of the players shall be divided into two groups—one known as pedestrians and the other as motor vehicles. A captain may be appointed for each side—choosing his own players.

Object of the Game

The object of the game is for each player to observe and obey the traffic signals, keeping his eye on the officer, and not to depend on the other fellow.

Rules and Points of Play

All must watch carefully for the signal. If it is given east and west, all motor vehicles and pedestrians going in that direction must move quickly, as they do on a real highway. If the first signal is given north and south, then all motor vehicles and pedestrians begin to cross that are going in that direction. Motor vehicles may give a signal and turn around the Traffic Officer.

The stream in motion cannot stop while the signal is open, but the moment it is changed any player who crosses the line loses one point for his side and becomes a "Casualty." He still continues in the game, though. Pedestrians who run and who "poke" (holding the traffic back) also score as a "Casualty."

When Fire Engine bell is heard, the Traffic Officer gives the signal for all moving to stop. Motor vehicles are to move over to curb of sidewalks and stop, and pedestrians stay on sidewalks. All players who disobey are counted as a "Casualty."

Officials

Two Scorers are needed—one for the pedestrian "Casualties" and the other for the motor vehicle "Casualties." The Traffic Officer is the umpire of disputed points.

The game is played in five or ten minutes. The team wins which has the least number of Casualties at the end of the given time.

It adds greatly to the interest of the game to post the score in sight of the players, on a blackboard, large paper, or other bulletin.

—Reprinted from *The Bulletin of Safety Education*, published by the National Bureau of Casualty and Safety Underwriters.

Free Educational Motion Pictures for Boston School Children

THROUGH an arrangement between the Board of Trustees of the Jewett Repertory Theater Fund, Inc., of Boston, and the Yale University Press Film Service, announcement of which was recently made in the Boston *City Record*, a series of photo plays portraying with historical accuracy the most striking events in the history of this country will be presented free to the school children of Greater Boston on Saturday mornings throughout this winter. A representative of the Department of Education at Yale will come to Boston each week to give an introductory talk of fifteen minutes, in order that the children may get the full benefit of the picture.

This series of thirty-six films, fifteen of which have been completed, are being produced under the direction of members of the Department of History and the Department of Education at Yale University, and it is proposed to make their production at the new civic repertory theater in Boston, in cooperation with the school authorities, an annual event.

Playing, the child grows character . . . . therefore there is nothing in the whole range of schooling that is as educational.—*Jacob Riis.*

The Sewage Treatment Works of Syracuse, N. Y.—Part II

System Involves Large Intercepting Sewer, Plain Sedimentation, Dilution, and Sludge Sterilization

Sludge Disposal

Having disposed of the effluent, let us return to the settling tanks and follow the path of the solids which settle on the bottom of the tanks during the one-hour average detention of the sewage therein. The principle established in Syracuse several years ago in the demonstration plant, that high sedimentation efficiencies are obtainable with short settling periods, provided continuous sludge removal is practiced, dictated the design of these settling tanks.

The sludge removal mechanism used in the settling tanks is the Dorr clarifier type, so successfully applied in industrial work and more recently to municipal utilities. The plow blades of this mechanism are mounted upon four trussed arms suspended from a heavy central vertical shaft rotating at a speed of about four revolutions per hour. They slowly sweep the deposited sludge in a spiral path to the central cone of the tank, from which point the sludge flows through a submerged 4-inch suction pipe into the sludge pumping-station piping.

Two of the four arms of the tank mechanism are equipped with articulated units, hinged and arranged to sweep the corners of the tank beyond the normal range of the radius arms. By means of these auxiliary arms it is possible to sweep over the entire bottom area. To prevent accumulations in the very corners of the tanks, these spaces—about 3 per cent of the tank area—were filled with concrete, the exposed face of which was smoothly troweled to a pitch of 1.6 on 1.

SETTLING TANK AND BRIDGE, SHOWING SLUDGE SWEEPING MECHANISM

THE RELATIVE PROPORTIONS OF SOLVAY WASTE AND SYRACUSE SLUDGE ARE 40 TO 1

Each of the mechanisms is motor-operated, provided with an overload indicator and alarm, and is equipped with a shear-pin which will snap in case of overload. The central shaft and drive mechanism is supported by a light structural steel truss bridge, spanning the entire tank.

Two sludge pumping-stations are provided, each station serving two tanks. Within these stations are placed 6-inch by 10-inch Goulds triplex plunger stuff pumps, one for each tank, interconnected and piped to permit great flexibility of operating control. The pumps are specially designed for handling sewage sludge, are driven by Westinghouse 15-horse-power slip-ring variable-speed motors, and are designed for a working pressure of 700 feet hydrostatic head. Pressure relief and sludge sampling valves are provided.

In each station the sludge pump pistons and other appropriate parts are continuously washed during service with city water, furnished by a small auxiliary triplex pump at high pressure. As this pressure exceeds the water pressure in the city main, the piping arrangements were designed to completely preclude the possibility of any polluting matters backing up into the city main because of this excess pressure. The four sludge pumps are all connected to the 5-inch sludge force main.

The sludge force main extends a distance of about 12,000 feet from the sludge pumping-stations and is made of 5-inch genuine

TRIPLEX PLUNGER PUMPS IN SLUDGE PUMPING-STATION

wrought iron pipe, carefully coated externally with a special bituminous compound to protect it from the corrosive Solvay Process Company wastes that largely constitute the terrain in this territory. To provide accessibility to the interior of the pipe line, in the event of clogging, cast iron hatch boxes are placed in brick chambers at about 500-foot intervals in the pipe line. At such points where the earth cover is less than 4 feet over the pipe, and at all points where the pipe is exposed to the weather, the line has been carefully insulated with four layers of 1-inch hair felt, adequately waterproofed and protected. Injury to the pipe during interruptions of flow occurring during freezing weather is thereby prevented.

The main is built of extra-heavy pipe with drive-pipe couplings, so that adjoining lengths butt together, providing a smooth bore throughout the entire length of the line. At angle points the pipe was specially mill-bent to a radius of 10 feet, to permit the passage of sewer-cleaning rods in the event of need.

The pipe line terminates at the outlet end of the Solvay Process Company waste pipes. These have been discharging spent lime, acids, and other industrial chemical wastes continuously for over 35 years. The volume of the deposited Solvay wastes which settle in their lagoons is about forty times that of the Syracuse sewage sludge, and the sterilizing capacity of the Solvay waste liquors is sufficient for complete sterilization of about ten times the Syracuse sludge production.

The unique opportunity afforded by the close proximity of the Solvay Process Works and the Syracuse sewage treatment works, which was recognized by the Intercepting Sewer Board engineering staff and taken advantage of through the courteous cooperation of the Solvay Company, has served to save the city of Syracuse many thousands of dollars in construction expense and many thousands of dollars in annual operating expense that would otherwise have been necessitated by the construction of sludge digestion and drying works. Through this method of mixing the Syracuse sludge with the Solvay waste, the sludge is buried inconspicuously, inexpensively, and inoffensively, and the discharge of such supernatant liquids as finally enter Onondaga Lake from the waste lagoons is completely sterilized.

Summarizing, it may be stated that at the treatment works the sewage is elevated by devices effecting extensive operating economies, treated in settling tanks equipped with continuous sludge removal equipment in an efficient and economical manner, and the sludge disposed of at a cost vastly below that in any other large city in the United States.

Operating Labor Costs

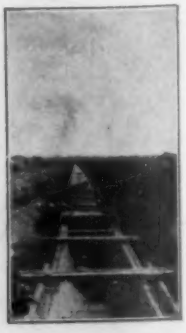
The complete personnel required for the operation of the sewage treatment works includes a superintendent, four operators, five attendants, and five laborers.

The operators—skilled electricians—are stationed in the main pumping-station. The attendants with power-plant experience look after the sludge pumps, the settling tank mechanisms, and other machinery. The laborers attend to the screenings, grit removal, and general plant policing. Operating schedules provide for 8-hour shifts and relief from duty every seventh day.

The total operating pay-roll of the plant is $27,760 annually. As the designed capacity of the plant is 27.5 million gallons daily, the labor cost will be approximately $2.77 per million gallons of sewage pumped and treated.

ACKNOWLEDGMENT.—Text and illustrations by courtesy of Glenn D. Holmes, Chief Engineer, Syracuse Intercepting Sewer Board.

CANAL SEWER, SHOWING FORMS



A MILE OF "U" TYPE SEWER

Snow Removal from City Streets
Part II

By Leonard W. Russell
Department of Streets, Worcester, Mass.

Class E—Heavy Snow

The handling of heavy snow-storms requires not only experience and ability, but careful preparation and planning. The principal factors to be considered are: the amount of money available with which to finance the work; the amount of equipment on hand; the equipment available from outside sources; the experienced men regularly employed; the extra outside men available; the area of streets near hospitals, fire-stations, and public buildings that should be cared for first; the method of quickly moving working forces, both regular and temporary; the dumping places; streets with surface car tracks that require the removal of snow; the side streets that do not require hauling, but must be made passable; the main trunk roads to adjacent cities and towns; the streets that are apt to become badly drifted; and country roads that must be broken out for the transportation of milk and other necessaries of life.

Without money, nothing can be done; with but little money, only the main streets can be touched; therefore, the amount of money controls the amount of work that can be done. Likewise, with plenty of men, plows, scrapers, sleds, trucks, etc., a great deal of work can be handled at the same time, but with the lack of these essentials, only a few gangs can be worked.

The plan of operation should first include the main streets, together with streets on which hospitals, fire-stations, and public buildings are located, then the main arteries to adjacent places and the streets where trolley plows are piling snow upon the remainder of the traveled way in their efforts to keep tracks clear. A predetermined schedule of operation of regular city employees and trucks and extra help and hired vehicles should be made on paper well in advance of the winter. Experienced and dependable men, selected from the regular force, can act as foremen of the various gangs. The green men should be divided up among the regulars so that all the gangs will have about the same make-up. A floating gang, composed of a few of the best men, should be held in reserve for emergencies and be ready for any duty that calls for individual superiority.

The predetermined plans should be worked out on paper, so that a foreman can be given a slip containing all the information that he requires to make a quick start on the job. He sees where he is to work, gets his allotment of men from one official, the transportation from another, and his tools from the tool-man Without the need of further instructions, he can start off with his gang, saving endless delay and confusion.

HORSE-DRAWN CHAMPION ROAD MACHINE, WHICH IS EFFECTIVE FOR HANDLING SNOW, BUT RATHER SLOW
This type of equipment is now frequently hitched up with a tractor, materially increasing its effectiveness

When the heavy storm first starts, the brooms, scrapers, and plows are usually put in service, as in the case of a Class D storm, so that there is plenty of snow ridged up ahead of the snow loaders or shoveling gangs. The next thing is to release these plows and scrapers and divert them to other streets where they may be needed. If the weather suddenly turns cold and the ridged-up snow becomes frozen, a scraper can be used in breaking up the toe of the ridge, thereby greatly facilitating the shoveling. Shoveling gangs should be worked in pairs, one working away from the dump, and the other toward it. With this scheme, two foremen can trade their teams about so that jamming will be greatly reduced.

Where dumping places are scarce, they must be occupied the first thing in the morning before other persons monopolize them. A picked foreman should have charge of a gang large enough to cover all dumping places required. These men should be regularly used for this service, so that they will thoroughly understand their duties and be familiar with the locations of the dumps.

After the cleaning gangs are in operation, their effectiveness should not be hampered by petty interference or meddling. If the plan has been properly worked out, there is no need for shifting them from pillar to post. If every complaint received regarding the condition of the streets were immediately attended to, the gangs would be thoroughly demoralized and little accomplished. Set a policy and stick to it. The complaints will be attended to as you arrive at those locations, or, if there is a real emergency, the floating gang can take care of it.

If it is desired to leave sufficient snow for sledding, it should be borne in mind that the snow on hills, especially those with a southern exposure, will melt faster than those with flat grades and therefore more snow should be left in such places to avoid later bare spots. It should also be remembered that north-and-south streets get more sun than the others and will melt faster. The south side of an east-and-west street shaded by tall buildings is more apt to freeze, as the sun cannot reach it; therefore that side should be attended to before the snow becomes too hard.

The most efficient way to handle large numbers of workers is to divide the city into districts and assign a competent official to supervise each district. He alone should be responsible for that territory and should be provided with such facilities as it has been previously decided that the section requires. As the work develops and his requirements become different, he can trade with other district leaders or apply to a superior official for the foremen, men, and equipment he needs. Superiors should direct the work through the district supervisors and not by personally issuing orders right and left to every man they meet, except in unusual emergencies. The policy of jumping over the intermediate subordinates causes uncertainty, confusion, and resentment.

To sum up this class of storm, there must be a working plan, developed by using the lessons taught by past experience. Experienced judgment should show the requirements to be met and the logical order in which the work should be done. The plans should be made long before the first snowfall; and if it doesn't work out the first time, watch execution and alter it as necessary until as near perfection as possible is attained.

Class F—Blizzards with Very Heavy Snow

This class of storm requires practically the same treatment as does a Class A storm, except on a larger scale. As a rule, all traffic is tied up, thereby shutting off the distribution of food supplies. The magnitude of the storm develops into a public calamity and requires the cooperation of the public to handle the situation, which is beyond the ability and resources of any regularly maintained force. Here, again, a well-prepared plan will greatly help to solve the emergency by showing just how the general public, merchants, manufacturers, and all other classes of citizens, may, by placing themselves under the supervision of, or in cooperation with, the trained force which the municipality maintains for this class of work, best serve their own interests and bring conditions back to normal most speedily.

Since there is a shortage of vehicles at such times, all volunteer workers should be used in opening car tracks and one side of wide streets. The snow can be piled up on the other side, leaving sufficient openings through which pedestrians may pass, and all fire-hydrants should be exposed. The vehicles should be sent to a designated central location, from which they may be distributed when most needed. It will be impossible to haul the snow from all the streets, so it is necessary to open one side and use the other for a dump. Later on, inlets to catch-basins should be dug out to receive melting snow, and in case of a sufficient thaw the toe of this piled snow can, by means of road machines, be worked out into the street to melt. Gangs of men can assemble where they leave off, continue their efforts until the main lines are cleared, the snow melts, or public enthusiasm dies out.

As an aid to swaying public opinion and impressing upon the people the gravity of the situation, a large Citizens Emergency Committee should be appointed by the mayor or council to assist and work with the street officials. These responsible citizens will rise to the occasion and be of great value in solving many of the difficulties of the situation. They can devise ways and means to obtain vehicles and men and shovels with which to handle the snow, can arrange for fuel and food distribution, and keep the people's interest aroused so that they will continue to help as long as the emergency exists.

In planning for such possible emergencies,

city officials should arrange to use sleds, trucks, steam shovels, and snow loaders on the main streets first and then on those narrow streets where there is not room to pile the snow on one side and it is necessary to haul it away. The gangs of men without transportation should be assigned to such streets as have sufficient width so that one side can be used for snow storage.

The district officials will find their emergency gangs diminishing rapidly after a few hours of unusual toil. They will have to keep consolidating their gangs until only one is left. Therefore, the individual officials should not attack the storm from widely separated locations, or they will be obliged to leave many uncompleted jobs behind as their men quit work. It is better to keep all the gangs as close together as possible, preferably on the same streets. Then the district official is reasonably sure of finishing one section before another is started.

BARBER-GREENE SNOW LOADER, AN EFFECTIVE PIECE OF EQUIPMENT FOR MOVING SNOW PILED AT THE SIDE OF THE STREET

Once communication has been opened up, the snow will be handled as in a Class E storm. In making preliminary plans for enlisting the services of the general public, it is well to consult with, and obtain ideas from, boards of trade, Rotary, and business men's clubs and other civic bodies.

Class G—Heavy Ice-Storms

With the air temperature very cold and the upper strata of air warm, it occasionally happens that a heavy precipitation of rain falls and congeals as it lands. This quick freezing of rain has a tendency to adhere wherever it strikes. If the temperature does not become colder or warmer and the storm continues for any length of time, it is inevitable that a great weight of accumulated ice will adhere to all exposed surfaces, such as trees, wires, roofs, etc. If the weight becomes too great, trees, limbs, poles, and overhead wires will be broken off and block the streets. High winds greatly add to this danger. This accumulation of débris must be cleaned up at once, but great care must be exercised that workers do not come in contact with live wires or get in the way of falling objects. The officials in charge of streets should at once order all electric currents cut off from overhead wires and should assure themselves that this is done. Then they can proceed to clean up the fallen accumulations without the danger of having some of their help electrocuted.

Floating gangs equipped with cross-cut saws, axes, and a length of half-inch rope should be sent out in automobiles to their districts. Conditions should be observed and reported to headquarters, if possible, by telephone. The gangs should open up main trunk roads first and side streets later. This is done by removing and throwing to the side of the road trees, limbs, and other obstacles, so that vehicles can get through. In many cases they can swing wires out of the way without cutting, or can lay them flat so that traffic can cross over them. The rope can be used in putting down hanging limbs. Later, regular cleaning gangs can complete the work of opening up the full width of the road and cart off the débris to some location where it can be safely burned.

In case it starts to thaw, many limbs may be saved by the expedient of jarring off the ice with smart blows from a long stick. This relieves them of the excess weight of adhering ice and they will soon straighten up to normal position, or at least out of the way of passing vehicles. Regular gangs should be equipped with saws and axes and assigned to different sections of the city. They should be provided with needed trucks or teams with which to remove the débris.

A newspaper announcement to the effect that citizens may have such of the fallen limbs as they will remove from the highway, will aid materially in quickly clearing the streets. Of course, they will remove only the good wood and will leave behind them the small limbs and

twigs. Provision should be made to clean up this small stuff before it is frozen in or covered with snow. As in all other classes of storms, a prearranged plan will be a great aid in getting started. The plan should divide the territory into sections and show desirable dumps. This will divide responsibility equally and provide for proper supervision.

Class H—Unexpected Emergencies

On the occasion of great disasters, such as floods, conflagrations, explosions, earthquakes, etc., there is much uncertainty and confusion. Wires may be down, railways cut off, and highways blocked. There will probably be many people killed or injured and many who may be in great distress because their homes have been destroyed or because they lack food or other necessaries of life. Until a plan of relief is made and an organization developed, everything will be chaotic. The authorities are temporarily nonplused and unable to function. This is the time when men with initiative and force can give great assistance to the community by sizing up the situation and organizing relief parties. All people need in such an emergency is a leader. Any substantial citizen who will assume temporary authority will receive ample assistance from patriotic citizens. He can gather them from his immediate neighborhood, briefly discuss the situation, form a tentative plan, and tackle the nearest problems. When the local or military authorities assume charge, these volunteers may offer their further services, or disband.

The most important thing at such a time is to get busy and do something—anything that is intelligent will aid in solving the dilemma. It is impossible to even suggest just what should be done, as such conditions vary greatly. There is no excuse for standing around and grieving. Many people are in sore distress, and each individual should do his part toward alleviating the situation. If there is a flood, make a raft with paddles and perhaps you can save some one from being drowned. If the streets are blocked with fallen buildings, take an axe, crowbar, or rope, and help to haul the débris to one side so that a free passage may be formed. If people are injured, render first aid to the best of your knowledge, get them to a comfortable place, and seek a doctor.

Municipal employees should try to reach their headquarters or at least telephone. If this cannot be accomplished, they should start to work in their own neighborhood and organize a band of workers. During emergencies is the time to show your worth. Try to open the trunk roads so that food and other supplies may be obtained. Keep trying to reach your headquarters until you have succeeded.

Salient Facts About Water-Works Electrification

Interesting Data on New Dayton Power Contract

THE first and most important thing to consider in the design of a water-works pumping-station is its safety as it relates to continuity of service, because a community without water is not only at the mercy of fire, but will suffer great inconvenience as well.

The proposed electric pumping-station for the Dayton, Ohio, water-works will have three separate and distinct sources of power, the Third Street Plant of the Dayton Power and Light Company, where a turbine and generator will be held in reserve for any emergency which may arise, the Miller's Ford station, which is a large modern power-plant, and the plant of the Union Gas and Electric Company of Cincinnati.

Two widely separate transmission lines connect Dayton with Cincinnati and three separate transmission lines, one aerial and two underground, will connect the water-works pumping-station with the two plants in Dayton. It cannot be denied, therefore, that the proposed electric plant will be as safe from interruption as a steam plant.

Spare Units

The new Dayton electric water-works pumping-station will be equipped with sufficient spare pumping units so that the peak load can be carried with the two largest units shut down. This is required by the rules of the Board of Fire Underwriters.

Even with a complete shut-down the reservoirs with limited use could supply the water consumers for possibly two days, as there will be 30,000,000 gallons in storage on the low service and 3,000,000 gallons on the high service with independent substations for pumping from the low to the high should the latter become exhausted before the low service water is consumed.

Any one who has ever seen a steam-operated station and compared it with an electric-driven station cannot but be impressed with the simplicity of the latter. All of the grief of maintaining high thermal efficiencies is passed back to the power producer. It is more difficult for the city to maintain high efficiencies than for a private company, first, because of the reluctance of the taxpayer to scrap obsolete machinery, and, second, because the wages paid by the city are inadequate to secure the highest types of engineering talent for its operation.

It is much easier to increase the capacity of the electric station by the substitution of units of higher capacity and without disarrangement than with any other type of plant.

Power Contract

Every unprejudiced person who has examined

the proposed contract with the Dayton Power and Light Company has said that the city of Dayton's interests have been safeguarded fully. The salient points covered by the contract are as follows:

The contract is for ten years from December 31, 1926, with provisions for a renewal for a further period of ten years.

At the end of the first ten years the city has the option of continuing the contract for two years more to enable it to generate its own power if it so desires, or of negotiating a new contract for ten years from December 31, 1936. The terms of this renewed contract are subject to arbitration if the city and company cannot agree, but it is provided expressly that the cost of current to the city under the renewal contract shall not be higher than the cost would be under the old contract. In other words, the city will be in a position to negotiate for a lesser rate at the end of ten years and will be protected from an increase in the factors which determine the rate for the renewed period from 1936 to 1946.

Rates

The city will pay a capacity charge of $1.50 per month per kilowatt during the hours from 7 A. M. to 7 P. M. and 75 cents per month per kilowatt from 7 P. M. to 7 A. M. In other words, the city can pump at half the day rate during the night. The charge for current will be 0.62 cent or 6.2 mills per kilowatt-hour, with coal at $4 per ton, and for each ten-per-cent increase or decrease in the cost of coal there is an additional allowance of 0.4 mill in the cost of current.

For example, if coal costs $3.60 per ton the energy charge will be 5.8 mills per kilowatt-hour, and if the coal costs $4.40 per ton the energy cost will be 6.6 mills per kilowatt-hour, and these ten-per-cent steps will be subject to interpolation to establish intermediate values.

Model of $10,000,000 Sewage Disposal Plant Creates Great Interest

Milwaukee Realtors Furnish Model Which Is Displayed Throughout City

WITH a view to interesting passers-by in civic improvements, Auer Incorporated, realtors, Milwaukee, Wis., have had a model of the new Milwaukee sewage disposal plant made for display in their windows and elsewhere. This model is one of a series of similar models and displays which this company has used for more than a year.

MODEL OF MILWAUKEE SLUDGE SEWAGE DISPOSAL PLANT AS DISPLAYED IN THE WINDOW OF THE FIRST WISCONSIN TRUST COMPANY

The sewage disposal plant model is constructed on the scale of 20 feet to the inch and shows the plant as it will appear when completed. T. Chalkley Hatton, Chief Engineer, states that the plant will be completed and turned over for operation in October, 1926. Prominent in the model with its towering smoke-stack is the power-house for the operation of the plant. Stretching to the east of it on land reclaimed from the lake are the sedimentation and aeration tanks. To the south are the screen house, the filter and dryer house, and the dry sludge storage building. The whole area is illuminated by a specially designed lighting system. The process is made more graphic by three bottles, the first showing raw sewage as it enters the plant, turbid and with a dark sediment, the second showing the clear effluent that flows into the lake, and the third showing the sludge which will be used as a fertilizer.

The raw sewage will be brought to the disposal plant on Jones Island through intercepting sewers, ending in four siphons built under the harbor entrance. The raw sewage, after passing through bar screens to receive the large material, flows through grit chambers where the mineral matter settles out. Then the sewage passes through a revolving fine drum screen and into an aerated conduit, where it is mixed with 15 to 20 per cent of activated sludge returned from the sedimentation tanks.

This mixture is then distributed to the aeration tanks through filtros plates through which air is forced to produce a continuous stream of tiny bubbles. After six hours' contact with air and returned sludge, about 95 per cent of the organic matter in the raw sewage is precipitated and a remarkable degree of purification is effected.

The mixture then passes into sedimentation tanks equipped with Dorr clarifiers, where after about 30 minutes the granular portion or sludge settles to the bottom and the liquid flows out through the troughs at the top and is discharged into the lake.

In six to seven hours the raw sewage undergoes such purification that the liquid emptying into the lake is as clear and colorless as drinking water and will show an average reduction of 98 per cent bacteria and 97 per cent suspended matter.

After sedimentation the sludge is withdrawn from the bottom of the sedimentation tanks and about 90 per cent is returned to and mixed with the incoming raw sewage. The remainder is pumped to the filter house, where the moisture content is further reduced. After treatment with acids, the sludge cake is conveyed to the dryer house and converted into dry fertilizer.

An initial production of 100 tons of fertilizer is expected daily, and this will increase as the population grows. The average value of the fertilizer is said to be about $20 per ton.

The area served by this plant covers nine-tenths of the county, 96,800 acres or about 150 square miles, having a present population of about 575,000. The intercepting sewers already extend to parts of this territory, and additional sewers will be built as the need arises. The maximum daily capacity of the plant will be 317,000,000 gallons, but the dry-weather flow is estimated at about 75,000,000 gallons.

According to the Advertising Department of Auer Incorporated, through whose courtesy we reproduce the illustration of the model of the sewage disposal plant, interest in the model has been so great that a number of civic organizations have requested its use since it was originally displayed in Auer's window. Among the organizations which have requested it are two branches of the Public Library, two branches of the Social Centers of the Milwaukee Public Schools, some of the classes in the Milwaukee Normal School, the City Club, the Men's Club of the Y.M.C.A., and several business and financial institutions. It has been seen probably by several hundred thousand Milwaukeeans and has served to create an interest in the plant which by any other means probably could not have been aroused.

The model was made entirely from cardboard, exactly true to scale. It was painted in actual colors and in every way represents the plant as it will actually appear when completed. In addition to the model there are exhibited a number of photographs of the interiors of the buildings, showing the machinery, and also photographs of the intercepting sewers. Through the creation and display of models such as this, this prominent firm of realtors has done much to increase the interest of taxpayers and residents in the public works of Milwaukee.

OUR ATTITUDE TOWARD CHILD WELFARE

The welfare of the children of the nation is our joint responsibility. I believe that the attitude of a nation toward child welfare will soon become the test of civilization.

—Herbert Hoover.

Control of Drug Addiction Mainly a Police Problem

By H. S. Cumming
Surgeon General, U. S. Public Health Service

DRUG addiction as generally understood, especially addiction to the various preparations of opium, is a condition brought about by the continued use of these drugs whereby the body acquires a tolerance to poisonous doses and is unable to maintain itself in comfort unless the use of the drug is continued or a cure is effected. This is the so-called drug habit, and any person who takes one of the addicting opiates several times daily for about three weeks is liable to be afflicted with a mild degree of it. As time goes on and the dosage is increased, the habit grows until a condition is finally reached where it cannot be broken without an ordeal of considerable severity. But the need that the use of the drug itself creates is not all that there is to drug addiction. This depends upon the nature of the person who becomes addicted.

A Situation Which Is Serious, But Improving

It is the author's opinion that the drug addiction situation in this country has been greatly improved by the measures that have already been adopted. Physicians are not now responsible for making addicts. The duty of physicians is to prevent addiction as far as it is possible to do so by attention to the broader problem of mental hygiene, and to treat persons who become addicted. But narcotic addiction can be kept within bounds only by law intelligently enforced by the various enforcement agencies. Its control is therefore mainly a police problem.

It is sometimes necessary in the treatment of certain painful conditions to give an opiate for long periods. Patients treated this way acquire the drug habit. They should not, however, be considered drug addicts in the ordinary sense, and no effort should be made to cure them until their original condition is relieved. These cases are not a police problem and they should be handled by physicians exclusively. The same applies to certain old and feeble persons who may or may not have had an adequate physical reason in the beginning to take narcotics to the point of addiction, but who nevertheless did so and now have had the habit for so many years that treatment would be permanently harmful or even fatal to them.

Types of Drug Addicts

The incurable or excusable cases constitute only a small proportion of the addicts who have been created in recent years, and they have always constituted a minority of the total number. The vast majority of those who have become addicted in recent years have deliberately sought narcotics and they use these drugs as a form of dissipation. These dissipated addicts are recruited from among a neurotic or psychopathic type of persons, many of whom would have been police problems even if they had never become addicted. The worst of them are comparable with the habitual criminal in their nervous instability and in their lack of appreciation of the desirability of conforming to established social customs. The most acceptable of the dissipated type are temperamental or neurotic persons who may be highly intelligent and useful citizens. Such persons dissipate with narcotics because the drugs give them a sense of relief from the underlying sources of their nervous difficulties.

Between the two extremes of the dissipated groups are addicts who started off with various grades and types of instability. Many of them belong to that abnormal type from whom are recruited the vast majority of our drunkards, but the most usual type are persons who as boys were problems to their parents, to the school, and to the police; they played truant from school; were unmanageable at home, or were neglected by their parents; and committed more or less delinquent acts, such as stealing. Many of this type are on the lookout for a thrill when they grow older. They think they can get it by indulging in a secret, forbidden practice and this is the only motive they have in the beginning for taking narcotics.

The knowledge that addicts are recruited mainly from an abnormal type of person leads to an inquiry as to why these persons are so

susceptible. The answer is that they get from narcotics an effect which normal persons do not experience or which they experience in only a slight degree.

Narcotics give them a feeling of peace and calm to which they are not accustomed and which, because of its contrast with their usual restless and dissatisfied state of mind, is interpreted as pleasure. These people have in their normal state unusual impulses and mental conflicts because of them; they feel inadequate or inferior; their usual restlessness and anti-social conduct is an expression of a compensatory striving against this; or specific acts may be pathological outlets for impulses not properly directed. The narcotic properties of morphine or heroin are sufficient for the time being to remove all of this and to lift these inadequate people in their own imagination up to the level of normal men.

If their power to relieve feelings of inferiority was the only effect that narcotics had, no great harm would be done by them. It is, however, not what these drugs do *for*, but what they do *to* the addicts that prompts us to use all reasonable measures to stamp out drug addiction. All preparations of opium reduce functional activity of the various organs and cells of the body and, when taken in large quantities, cause more or less emaciation and impairment of the general health. They bring about a state of lassitude, with loss of energy and ambition. Idleness with its attendant social evils follows, and all of the harmful effects tend to grow worse as the addicts grow older. If cocaine is used, emaciation is more rapid and the nervous system is also harmfully affected.

Because of the various effects of narcotics, many addicts suffer a moral slump; often they are socially useless, a burden to their friends, and a problem to the community. Permanent cure of them is extremely difficult to accomplish, because the same instability that originally caused the addiction remains and may even be increased by it. The most promising treatment is a complete change of environment, but this cannot often be offered. A hopeful circumstances is that opium in perhaps the majority of cases does no permanent physical harm; therefore, when it is possible to cure a morphine or heroin addict he is in many instances as well as ever.

Relation of Drug Addiction to Crime

There is much misunderstanding about the relation of drug addiction to crime. The public has been led to believe that addicts are maddened by narcotics or are converted by them into self-imagined heroes liable to commit violent crimes and that the jails are full of such criminals.

The effect of opium in this respect is the reverse of that of alcohol. Opium makes a man effeminate, alcohol makes him a brute; opium soothes, while alcohol maddens him. It is these effects of opium that make it socially so harmful to inferior individuals. Under its influence they are satisfied with things as they are; they are willing for the world to run itself, and for their friends to support them. A man charged with morphine or heroin has lost part of the ambition and impulse he may have had to commit a violent crime for gain or any other purpose. The so-called "inflated personality" and "heroin hero" is no more than this—an inferior man who through the narcotic effect of one of these drugs has temporarily lost his sense of inferiority, together with the restlessness and discontent that go along with it.

There is, however, a connection between drug addiction and violent crime, but it does not proceed from addiction to crime, but in the opposite direction. Criminals are restless, unstable, psychopathic characters who because of their instability are specially liable to become drug addicts. Morphine or heroin will not absolutely prevent these criminals from committing violent crimes, although it inhibits their criminal impulses. When the effects of the drugs wear off, they are as bad as ever, and some addicts have long criminal records. The idea that opiates soothe without completely abolishing criminal impulses is based on personality studies of criminal addicts. It finds support in a statistical study recently made of inmates of New York State prisons that harbor none but felons. About 5 per cent of these prisoners are drug addicts. In one period of nineteen consecutive months following the so-called crime wave in New York, 1,460 inmates were admitted to Sing Sing Prison, and of these 5.5 per cent were addicts.

Cocaine is a stimulating drug which up to a certain point makes a criminal more efficient as a criminal. Beyond this point of maximum stimulation it brings on a state of anxiety and fear. The cocaine addict is then likely to think that people are after him and to be ready to run away from them. In this state he is in no condition to deliberately plan and commit robbery or murder, but when in such state of extreme anxiety and fear it should not be lost sight of that, like a ter-

rorized animal, he may strike in any direction and so commit crimes of violence and even murder.

Although narcotics do not arouse criminal impulses, they do tend by their devitalizing moral and physical influence to convert certain persons into criminals.

The prevention of addiction in the unstable class of persons who are so susceptible to it and who constitute the great majority of all addicts of the present day is a problem for the police. Physicians can do very little about it. By educating the public in the facts of heredity, so that fewer unstable people will be born, and by giving such treatment in early life as will prevent the further unhealthy development of persons disposed to nervous weakness, much is being done by the medical profession and much more will be done when more facts are discovered and the agencies working to correct existing conditions are better organized, but this is a part of the larger problem of mental hygiene. No one expects, however, to completely eliminate the mentally unstable. It will, then, be necessary always to have laws to protect them from the consequences of their weakness.

Anti-Narcotic Laws and Ordinances

It was the appreciation by physicians that they could not, unaided, prevent people from becoming addicted that led to the enactment by states, municipalities, and the National Government of numerous narcotic laws and ordinances. These regulatory measures have added a burden of expense and work to busy physicians, but the profession, constituting the large majority of physicians, appreciates the value of these measures and is heartily in favor of them.

The first anti-narcotic law of importance was enacted by one of the states in 1897. Fol-

POLICE COMMISSIONER RICHARD E. ENRIGHT AND SPECIAL DEPUTY POLICE COMMISSIONER DR. CARLETON SIMON EXAMINING THE NARCOTICS SEIZED BY THE NARCOTIC BUREAU, NEW YORK POLICE DEPARTMENT, DURING 1924

These 1,516 parcels of narcotics represent 2,732 arrests and have a street vending value of $2,500,000

lowing this, many states and municipalities enacted measures designed to prevent the sale of preparations of opium or cocaine except on physicians' prescriptions. These measures did some good, but they, as a rule, did not attempt to limit the right of any addict to have all the narcotics that a physician might prescribe for him, nor did they interfere with the illegitimate traffic, which, however, was at that time unimportant. Those who have not followed the history of narcotic legislation and are familiar with our present excellent laws will be surprised to learn that prior to 1909 the Federal Government had done practically nothing to restrict the narcotic traffic. In the decade 1900-1909 there was an average annual importation of 148,000 pounds of smoking opium, which any citizen of the country was at liberty to smoke in so far as the central government was concerned. During the same period the annual importation of medicinal opium was 480,000 pounds. How badly some restriction was needed is shown by the fact that for the past few years our importations of opium have averaged about 130,000 pounds and that has been sufficient for all medical needs.

The law prohibiting the importation of smoking opium was passed in 1909. Prior to that time hundreds of persons became addicts merely because it was convenient to smoke and because in some circles it was considered to be quite a desirable experience to do so. Addicts are still met with who started years ago as smokers and who have had their lives ruined because of the events that followed these early experiences. The Harrison Law, passed in 1915, was still more important. This was a revenue law, but it was designed to limit the use of narcotics to strictly medicinal and scientific purposes. This law made it impossible for addicts who had no good reason for continuing their addiction to secure narcotics legally. The result was that thousands applied for treatment all over the country and were cured, and others cured themselves merely by doing without the drug for a short period.

Prevention and Motive for Cure

Perhaps the prevention of addiction has been the greatest benefit that has been derived from this law. Before its passage people suffering with real or imaginary diseases bought opium or preparations containing opium and dosed themselves until they became addicted. The same result was brought about by the refilling of their doctor's prescriptions. This was not dissipation but ignorance, and many who were addicted by these two methods were normal, law-abiding citizens. All of this has been changed, so that no law-abiding citizen is now in danger of being made an addict unnecessarily. The good results are reflected in studies recently made into the immediate cause of the addiction. Prescribing by physicians and self-medication are now relatively unimportant causes in nearly all sections of the country. Doctor Simon has reported that of some 8,000 addicts he handled in New York during a period of three years, about 98 per cent attribute their addiction to the influence of evil associates. Practically the same situation as to etiology has been observed by other workers.

One of the good effects of the severe narcotic laws has been to furnish an adequate motive to addicts for cure. Some of them would not be moved by any measure that did not threaten punishment. Every year numbers of addicts apply for treatment for no other reason than that they desire to avoid a penal sentence. The motive of others is to escape from the poverty that the high cost of peddled narcotics has thrust upon them. It is of course known by every one familiar with the subject that the majority of these unstable addicts relapse, but in the course of time the more normal of them are permanently cured. One reason for the present high frequency of relapses is that the addicts have been worked over so much that only the most pathological of the older cases remain and the newer cases are in the beginning very unstable. Not much can be expected of a man who deliberately defies the law and the penitentiary in order to start a form of dissipation that he knows will in the end make an outcast and dependent of him.

Our restrictive laws have undoubtedly stimulated smuggling and the illicit domestic traffic, and some who have been deceived by the great numbers of addicts that our courts now handle have said that the laws have caused an increase of narcotic addiction. If the illicit traffic were stimulating the creation of new addicts, Doctor Simon could not report as he has done —that out of the thousands of cases handled by his bureau in New York last year only seven new recruits to narcotic addiction were found, nor would improved conditions be reported from other sections of the country.

Other laws dealing with narcotics have been enacted since the passage of the Harrison Law, and the United States probably now has the most comprehensive system of narcotic drug control in the world.

Although the laws have been beneficial to

addicts, to would-be addicts, and to society in general, there are cases who seem to have been rendered less useful to themselves and to society because of them. These cases have not slumped socially because of a lack of narcotics, but because they have been unequal to the task they set for themselves of defying the law. They were originally so psychopathic that they, having tasted narcotics, prefer all the inconveniences of a life of addiction to abstinence from them. There should, of course, be no relaxation of generally useful measures for the doubtful value to be derived from allowing such abnormal individuals to freely dissipate merely because they intend to do so anyhow.

Illicit Traffic Must Be Stopped

There is another class of cases, already referred to, some of whom have been indirectly harmed by the laws. I refer to the legitimate incurable addicts, mostly old people, who in some instances have been allowed to suffer because of the fear their physicians had that they might in some way involve themselves with the law if they continued to prescribe for them. The suffering in these cases is not chargeable to the law, but to a misunderstanding of it.

It is probable that a more generally charitable view toward addicts would avoid the unfortunate situation in these cases. Addicts should not be looked upon as moral perverts merely because they are addicts. Some are honest, industrious citizens. Many of them were given such a poor heritage by their parents that they could not resist temptation and most of the others have been rendered weak and non-resistant by their addiction. No unnecessary harshness should be meted out to them, but a certain measure of discipline is desirable if they are to be saved from themselves. The smuggler and the peddler, no matter under what guise they work, should be handled severely. If the illicit traffic that they keep alive could be stopped, all the addiction that it is desirable to cure or to prevent would disappear and there would be no addiction problem.

ACKNOWLEDGMENT.—From a paper read at the 1925 International Police Conference, in New York.

The Mayors and Golden Rule Day

By Mabell S. C. Smith

FOR the third year the mayors of the United States are aiding the campaign to promote the observance of Golden Rule Day, which is to be celebrated on December 6. The President, the governors of many states, the members of various organizations, and many individuals are backing this movement to stir Americans to a practical expression of the Golden Rule that shall give food and shelter and training for self-support to the orphans of the Near East.

When we in prosperous America sit down to our usual meal, its plenty is so customary that we eat it thoughtless of the thousands whose needs are so much greater than ours, whose means of supplying them so much less. If, then, we sit down to a meal of the wholesome, but extremely simple, foods that are given the children in the Near East Relief orphanages, it is natural that we should compare the lot of these orphans with the lot of our own youngsters and give a generous contribution toward the care of the orphans.

The mayors do not stop at proclamations of the day; many of them are setting an example. South Carolina's mayors, for instance, were helpers last year. The chief officials of Newberry, Clinton, and New York were active; the Mayor of Charleston was an ardent supporter, and one of the Golden Rule teas was held at his house; the Mayor of Hartsville presided at the first Golden Rule dinner of 1925; the Mayor of Chester headed the work that made his town the "Golden Rule City of America" in 1923.

In New York State the Mayor of Albany served as Honorary Chairman of the Golden Rule committee. In New York City the Mayor was cooperative especially during the Bundle Day work as active chairman of the Near East Relief committee. In Troy the Mayor was the active chairman. The Mayors of Mechanicsville, Glens Falls, Syracuse, Rochester, Binghamton, Schenectady and other municipalities gave active support to Golden Rule Day.

In Connecticut the Mayor of New Haven has given fine cooperation and the Mayors of Norwalk and New Britain have been most helpful. The Mayor of San Francisco is chairman of the Golden Rule committee. The Mayor of Philadelphia is with us. So are the Mayors of Salt Lake, Roosevelt, Moab Town, Ogden City, and many other municipalities of Utah and other states all across the continent.

This year a distinct effort is being made to see that the contributions are collected and that no one who wishes to make a donation refrains because he does not know where to send the money. If he does not know the name and address of his state director of Near East Relief, there is always the National Headquarters at 151 Fifth Avenue, New York City.

Some of the mayors are so practical as to publish the menu suggested for the family meal. It is: meat stew or macaroni and cheese; stewed apricots with syrup; bread; cocoa. But any foods and service that are simpler and will turn the thoughts of the people toward the needs of the orphans of the Near East will be a fitting response to the Golden Rule Day proclamations of the mayors of America.

Wherefore Country Planning?

By Frank A. Waugh

Professor of Landscape Gardening, Massachusetts Agricultural College

ALMOST everyone turns up his eyebrows at the first mention of country planning. It doesn't seem plausible. On the well-established principle that God made the country, and man made the town, it is inferred that man might make some headway at city planning but that any attempt to improve on the country would be impious and presumptuous.

Nevertheless, the parallel between city planning and country planning is a true one and runs a good way. City planning is now fully recognized. New planning and constant replanning are absolute necessities to the growing city. Well-trained men calling themselves professional city planners are finding a life-work in this field.

Now, what is good for the city is nearly always good for the country, and so by pure analogy we draw a strong presumption in favor of country planning. Presumption changes to certainty as soon as we examine a few pertinent facts.

It will help toward a clear understanding of these facts if we get first a definite idea of what country planning is and what it is not. On this point the parallel with city planning will help us. That work began with a movement for a "city beautiful"; but it long ago passed that stage and is now accepted to include all plans for the physical improvement of the city—all street plans, public buildings, parks and playgrounds, land subdivision, zoning, transportation, and anything else on which a corporation could give a mortgage. So in the rural field, if we will confine our attention to physical property,—all of which might be improved and better adapted to our uses,—we shall find the true basis of country planning.

TOWN HALL, PETERSHAM, MASS.
The center of the county business

In the text-books it has also been defined as the acquisition, conservation, improvement, and utilization of common property. Just what this means in a practical way will appear from one or two examples.

When the Settlers Wanted Schools

In the days of my early recollection in Kansas the new settlers wanted schools. There was much controversy as to where the lines of the new school districts should be drawn, but eventually they had to be drawn somewhere. There were school districts that were too big, and some that were too small, and some with awkward, irregular outlines. Mistakes were made and had to be corrected. But the men who made the mistakes and those who made the corrections were all planners. They were laying off the map of their own neighborhoods, sometimes well, sometimes stupidly.

Then, when the school district had been mapped, all the men and women included within its boundaries got together in Steve Brown's barn and argued themselves black in the face over another problem in country planning, *videlicet,* where should the new schoolhouse be located? Citizens from the south end of the district wanted one location; citizens from the other end wanted a more northern location. And the argument continued until a compromise was reached—a compromise expressing the balance of influence between the north and south ends.

Is there any adult man or woman living who cannot remember incidents of just this sort?

However, we do not need to go back to the

early settlement of Kansas in order to illustrate the facts of country planning. At the last annual town meeting in our own country town in Massachusetts, there was a warm disagreement with respect to a certain road. State aid was available for the construction of a trunk line passing through our town. Some citizens wanted the through road in one location, some in another; some considered the fact that we should have to spend a lot of our own good taxes on the project, and didn't want either location. When the votes were all counted, I found myself in the minority; somebody else's country planning was better than mine. But I shall pay my share of the cost just the same. I shall do it cheerfully, too, because that is the way of democratic government.

NATURAL PLANTING ALONG A NEW YORK COUNTRY ROAD

Principles Versus Politics in Planning

Now it must have occurred to every thoughtful person that this democratic process, lovely as it is from the political point of view, is not the best method which could be devised for country planning. An intelligent, unprejudiced, non-political superintendent of education could divide up his whole county into school districts and get better results for everybody than the voters could ever get for themselves by any process of haggling, log-rolling and vote-trading. The man who did the planning would need a moderate equipment of brains. He ought to know something about school administration. He ought to have some statistical facts in his possession, such as the number of school children in each neighborhood, the location and condition of roads, etc. But, given a knowledge of the principles and possession of essential facts, a real plan could be projected, and such a plan would bring an actual benefit to all concerned.

In the matter of state roads for Massachusetts or Utah or Texas, the high desirability of planning—really intelligent, foresighted planning—is equally obvious. If the location of state roads in Massachusetts is to be determined by the haggling and scrapping of town meetings in 150 different towns, we shall certainly never have a connected road system. We shall have a crazy patchwork. Fortunately, we do have a perfectly competent state highway commission which is not a bit bashful about locating state roads and determining all the details of their construction. And such decisions by a disinterested and well-trained central authority are perfectly certain to work to the advantage of all parties.

It might be possible to go even farther. If we can imagine a man, skilled in engineering, knowing something of architecture, with a fair understanding of school problems, and especially filled with sympathetic knowledge of country life, such a man might make plans for the convenience of a whole county or state. He could adjust the road system to the needs of the schools, to the requirements of moving crops, to the habits of pleasure travel by automobile. Since he could bring together and harmonize all requirements, his plans ought to be better than any made with a less comprehensive view.

It has just been said that the genuine country planner would need a thorough knowledge of the requirements of farm life; also a warm love for the country. A city planner transplanted to the country will never turn the trick. Some of those same city planners have already entered upon what they call "regional planning." This means the planning of a whole group of cities and all the country in between. I have listened to their speeches and have read their books; and it seems as though the chief use they have for the country in the "regions" which they plan is to cut it up into city lots or to make it into playgrounds for factory children or into golf-links for factory owners.

With respect to certain localities, it might be said that unless the country planners capture them for country uses, the regional planners will appropriate them for city uses. It is just a question of beating them to it.

City Planner and Country Planner Should Work Together

However, the one fact which should be stressed here is that city and country ought to be planned together. Each is dependent on the other. For the prosperity of each it is indispensable that they be linked together in the closest possible manner. In many ways they complement each other. There must always be a certain palpable balance between the two. City planner and country planner should therefore work together.

Country planning is not merely nor mainly an attempt to preserve the beauty of the rural districts. Beauty is desirable, even essential. But practical convenience is also to be considered. The requirements of farming, of business, and of social intercourse must be given a prime hearing. Health is of outstanding importance. And one of the curious, interesting, and reassuring facts is that all these are compatible—even cooperative. When health and practical convenience have been rightly conserved, much has been done toward conserving the natural beauty of the country —more than would be accomplished by planting rose-bushes in the cemetery and Hydrangea paniculata grandiflora all along every mile of country highway.

Another misapprehension needs to be exploded. That is the idea, quickly born in shallow and suspicious minds, that country planning is an expensive fad. Quite the contrary is true. Every kind of intelligent planning is conservative and saving. If we look ahead and plan carefully how things are to be done, we shall always save money by that means. Especially is this true of public business, where many things are sure to be done haphazard. The great wastes of tax money come precisely from lack of planning. Any city planning, therefore, or any country planning at all worthy of the name, is the surest economy in the world. And the objector who tries to dismiss it by calling it some fool theorist's scheme for spending more money, simply proves that he cannot understand two times two.

Conditions are changing everywhere. In most parts of our U. S. A. these changes are rapid and pressing. New conditions require new provisions, new roads, new parking places, new schools, new playgrounds, all sorts of new adjustments. The township or the country or the state which does not foresee these changes is blind; if changes are foreseen and no plans made to meet them, then such towns, counties, or commonwealths are culpable beyond all excuse. Wise persons will plan for the inevitable future—for a future which we prefer to make better than the past. And those who dearly love the country, the checkered farms, the rolling hills, the profitable forests, the indispensable trout streams, will plan eagerly for a better future for their own homes.

Housing Essay Prizes—Better Homes for Brain-Workers

IN an effort to encourage better housing for intellectual workers, the International Federation of Building and Public Works, with headquarters at 17 Avenue Carnot, Paris, France, announces the organization of an international essay competition for which Willard Reed Messenger, of New York, has offered $1,000 in prizes. The first prize will be $500; the second prize, $300; the third prize, $200. Participants should submit their papers typed in French or English not exceeding four to five thousand words, which may be accompanied by sketches, not later than January 15, and prizes will be awarded the following month. Papers should include the four following divisions, states the official announcement just issued from Paris:

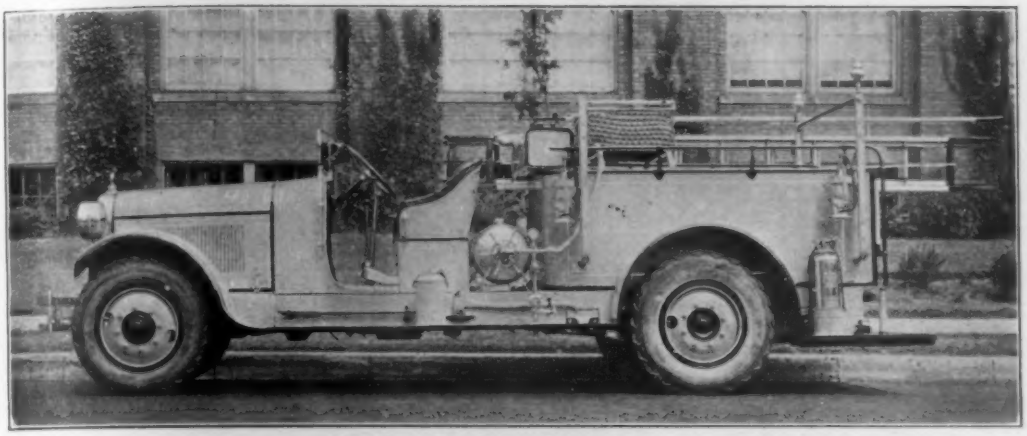
I. Administrative or legislative measures for facilitating the construction of houses intended for the middle classes or intellectual workers
II. Financial policy—loans, amortization, etc.
III. New construction methods intended to reduce the cost of building, together with sketches
IV. Conclusions

The data submitted and sketches must bear some legend or pseudonym and be sent with an enclosed plain, sealed envelope bearing only the legend on the outside and containing enclosed the name, address and profession of the competitor, which will be opened only after the winners have been selected by the Jury of Judges. The Jury will include at least two American members, three members will be named by the International Federation and three by the French National Federation, and three members named jointly by these two organizations. The Jury will choose its own president.

Social Welfare Administration* Combined with *Better Times

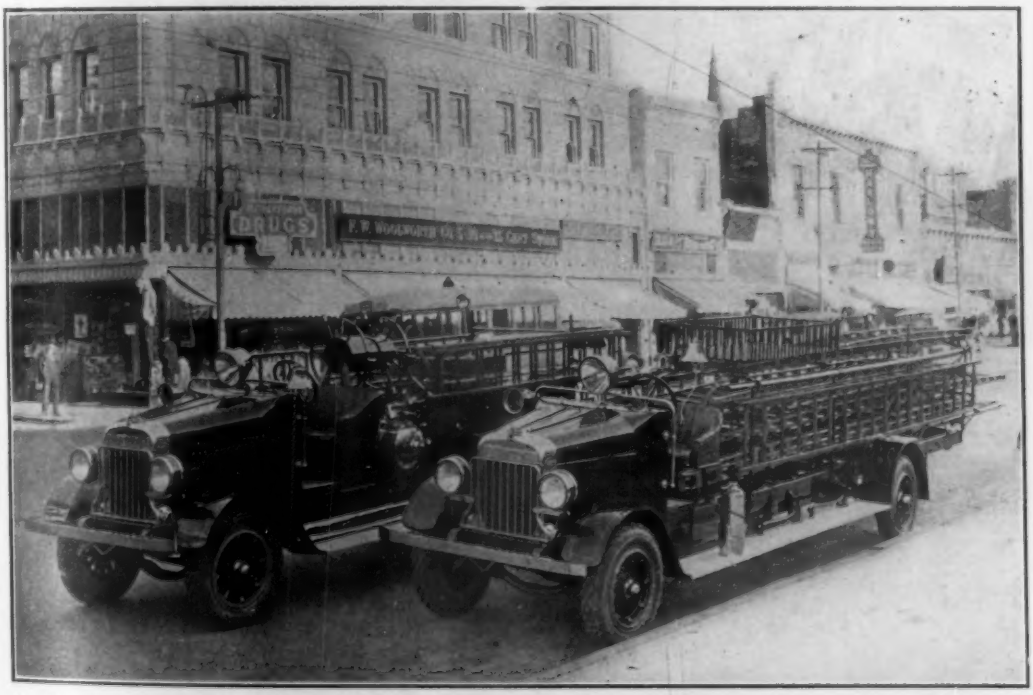
Better Times, the welfare magazine, announces that its feature articles on publicity, money raising, purchasing, and other technical problems of charitable and social welfare organizations, which, during the past year, have appeared in a special bi-monthly section, *Social Welfare Administration*, will henceforth be incorporated as a department in the body of the magazine and will be published monthly. Subscribers to *Social Welfare Administration*, as an independent bi-monthly publication, will receive *Better Times* monthly until the expiration of the subscriptions.

New Motor Fire Equipment



WELL-EQUIPPED FIRE TRUCK RECENTLY PURCHASED BY THE CITY OF SPRINGFIELD, OHIO

This truck consists of a Northern single-tank combination chemical and hose mounted on an International truck having a 144-inch wheel-base and equipped with a 6-B Continental motor



A NEW COMBINED HOSE AND CHEMICAL TRUCK AND A HOOK AND LADDER UNIT RECENTLY PURCHASED BY PETALUMA, CALIF.

Petaluma has spent $75,000 on its six trucks. Five regular firemen are on duty by day and 8 by night. In addition, there are 13 call or part-pay firemen, all of whom have automobiles so that they can quickly respond to an alarm. Bells and sirens, the operation of which is controlled from one of the fire-houses, are installed on all main thoroughfares to warn traffic in time of fire. One of the new International trucks shown above, designated No. 4 Truck, is a chemical unit, carrying a 40-gallon chemical tank, 1,200 feet of 2½-inch hose, 200 feet of 1½-inch hose, two 15-foot ladders, two 3-gallon Pyrene extinguishers, two tubes of dry chemicals for chimney fires, one acid can, and a full complement of shut-off nozzles. The other, known as Truck No. 5, is a hook and ladder unit, carrying 1,500 feet of modern trussed ladders, including a 50-foot extension ladder, a life-net, a powerful searchlight and an electric siren

The Sydney Zoo

By Jean Schoen

OVEROOKING the magnificent harbor of Port Jackson, lies one of the most picturesque zoological gardens in the world. This is Taronga Park, show-place of Sydney, Australia, and striking example of what can be attained in a happy blending of art and nature. Taronga Park is situated on a rocky eminence sloping steeply down to the water's edge, and every effort has been made to take full advantage of its unusual topography. This is, indeed, singularly adaptable to the needs of a zoological garden, offering a wide variety in elevation and exposure. The more rugged slopes are given over to the extensive and admirably constructed open pits, built in emulation of some of our American zoos. The concrete is shaped and colored with such a close resemblance to the indigenous rocks that it is often difficult to ascertain where the natural leaves off and the artificial begins. The pits are exceedingly roomy and comfortable, and only a view from above, in which the separating moats are perceptible, dispels the illusion that the bears and lions are just casually strolling around to enjoy the fine panorama of "our 'arbor" afforded at every turn of the walk.

On the gentler slopes at the top of the promontory are located the various kinds of cages, pools, animal houses, and fenced pastures. The pools merit special attention; they are excellent in arrangement and naturalistic construction, and generous in proportion. The accompanying photograph showing part of the seal pool, will afford an accurate gage of its size.

SEAL POOL IN TARONGA PARK IN THE SYDNEY ZOO
The refectory is shown in the distance

The park buildings include mainly the ferry landing, the refectory, and a minimum of animal houses, owing to the fact that the mild climate precludes the necessity of providing winter quarters for many of the animals and birds. What architecture there is, however, adds materially to the esthetic aspect. Even the wood and stone benches found along most of the winding paths show a studied attention to artistic detail and are worthy of imitation in some of our own parks.

The planting is confined mainly to natural Australian flora and is of especial interest to the foreign visitor. The striking colors of many flowering shrubs and trees make an impressive foil against the bluish background of the ubiquitous

VIEW FROM IN FRONT OF THE BEAR PITS IN THE SYDNEY ZOO, SHOWING THE ARTIFICIAL ROCK WORK

gum tree (eucalyptus), the gums, in turn, forming a feathery and unmistakable silhouette indissolubly associated with the Australian landscape.

Topography, environment, and indigenous flora have together conspired to make Taronga Park an ideal location for pleasurable instruction and recreation, and the judicious mutual adaptation of the artistic and the natural in planning and construction have promoted its utility and enhanced its beauty, making of the two a thoroughly uniform and harmonious whole. It is to be regretted that Taronga Park must stand out as one of the few efforts made by the city of Sydney to keep intact the unparalleled beauty of her splendid harbor—one of the greatest natural assets of any progressive city.

A Village Civic Club Makes Township Government Efficient

By Orrin Erickson

THE little village of North Warren, in the foothills of northwestern Pennsylvania, was for many years confronted with the problems that attend every growing community, and in addition was hampered by the lack of local government. The population of the village had increased to about 3,000, but, under township rule and with no local body to further its interests, the community had failed to develop civic improvements in keeping with its growth.

One of two courses was open—to organize as a borough, or to incorporate with the neighboring city of Warren. While borough government would no doubt have been an improvement from some standpoints, a strong sentiment against it was aroused by the fact that neighboring communities which had become boroughs were now burdened by high taxes. Then, too, it was pointed out, as a borough North Warren would no longer receive help from the Commonwealth in the maintenance of state roads running through the village. To take the other alternative, that of incorporating with Warren, a city of 15,000 population, also meant increased taxes. Consequently, the issue was avoided, until the matter finally came to a climax in an unexpected way.

A prominent citizen of North Warren, stepping from behind a street car directly into the path of a speeding automobile, was instantly killed. The investigation which followed not only exonerated the driver, since he was traveling at a rate within the state speed limit in force here, but brought forth a scathing denunciation of the backward town government. It was asserted that if there had been street lights at the point where the accident occurred, the fatality might have been avoided; or if there had been some system of traffic control, the accident might not have happened. And so there was built up a heap of convincing evidence of community negligence.

A week after this incident, a meeting of about twenty-five leading citizens was held in the schoolhouse, and once again the question of a change in government was argued upon. After a long session, the meeting adjourned with a decision to organize a club to be known as the North Warren Civic Welfare and Social Club, the objects of this body to be the furtherance of community and civic projects. Three active, progressive men were appointed to serve as its officers. The Club's form of organization was not pretentious. Its constitution outlined only its objects and was not a wordy document of rules and regulations.

During the next few months the membership of the Club increased to more than 100, and the influence of the organization expanded until it was in complete, though unofficial, control of the town's affairs. Within a year some of the community's most pressing civic problems had been solved.

A street-lighting system covering every section of the village was the first improvement effected. Under township rule in Pennsylvania a community may obtain a street-lighting system after ninety per cent of the taxpayers have signed a petition for its installation and a contract has been drawn up between the township supervisors and a light and power company. A committee was appointed to take care of these necessary details, and within a short time the system was in operation.

The traffic regulation problem was solved. Caution signs were erected at each of the highway approaches to the village, and successful efforts were made to curb reckless driving through the village streets.

At the railroad grade crossing on Jackson Street, one of the main streets of the village, it was customary for freight trains to be stopped nightly for the purpose of switching cars, and residents were frequently inconvenienced through finding their way blocked by the stalled trains. A complaint to this effect was made at one of the monthly Club meetings, and the President was requested to bring the matter to the attention of the officials of the railroad company. The outcome of this action was the issuance of an order by the company requiring train crews to cut the trains when switching at this point, and a promise was made that another switch would be installed to prevent delays at the crossing.

The sidewalk committee of the Club assumed the responsibility of improving the condition of the sidewalks, and the work was done at a rate satisfactory to all concerned. During the winter a snow-plow, financed through popular subscription, made foot traffic possible. Another committee was successful in securing a more equitable method of tax assessing. At the instigation of the Club, North Warren joined with three neighboring communities in a successful opposition to a proposed increase in the rate for natural gas from fifty to seventy-five cents per thousand cubic feet.

One of the most recent important activities of the Club has been the establishment of a volunteer fire department, equipped with hooks and ladders and a small chemical truck. This apparatus is adequate to take care of small fires, and the problem of how to handle any large conflagration that may occur has been solved by an agreement with the city of Warren by which we can count on assistance from the paid fire department of that community when the need arises. The Club also has to its credit the instigation this year of a clean-up campaign. With the help of the Boy Scouts and of truck owners who volunteered their services, the town was cleared of quantities of dirt and waste materials which have long accumulated.

The monthly meetings of the Club bring together groups representative of all classes to discuss important community problems, and to enjoy a social hour with entertainment and refreshments. Through these meetings there has been fostered a growing spirit of good-will and civic pride. The success of the many projects thus far conducted under the Club's leadership has so satisfied the people of the community that the question of acquiring borough control is no longer discussed. Following the example of North Warren, other communities in this section have organized civic clubs similar to the one in this village, and public sentiment against borough control for the small town is spreading throughout northwestern Pennsylvania.

Two Distinct Conceptions of City Growth

THE older nineteenth century conception is that of growth by accretion—the mechanical addition of blocks and avenues to the original center, proceeding automatically and without limit, as in the "growth" of a crystal. The newer conception is that of organic growth or growth by fission; under this method, when a city grows to a point beyond which it can no longer perform its essential functions readily,—when open spaces are too dear, when housing quarters are too congested, when industrial operations become hampered and checked,—the city, in order to provide for additional quotas of people, divides up, as a cell divides, and forms another city, with its own nucleus of civic institutions, and its own norm of development.

The inorganic method of city growth is doubtless in harmony with our current mechanical and financial régime; and while the keener sort of planner does not always like its results, he accepts its inevitability. He may, of course, do lip-service to the ideal of garden cities, but in practice he is ready to foster mechanical growth, in spite of the wastes, dilapidations, and human discomfort that accompany it, and in spite of the fact that it nullifies many of the essential reasons for a city's existence. The organic method of growth is that advocated ceaselessly by the English garden-city group; they conceive of the parent city sending forth satellite towns, each of which shall have its own economic and social nucleus, its own peculiar relationship to the parent city and to the countryside.

Does a city exist to promote the life of its citizens? Or do the citizens exist in order to increase the size, the importance, and the commercial turnover of the city? That is the real question that lies in back of every city plan; there is no compromise between these points of view, for the inorganic is as different in quality and function from the organic as a cinder is from a flower.

—Lewis Mumford, in The Journal of the American Institute of Architects.

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IDEAL STREET TREE PLANTING—12 FEET FROM CURB TO SIDEWALK
Unfortunately, circumstances frequently will not permit so much space for trees, but the minimum allowance should never be under 3 feet

Our Street Trees: They Deserve Better of Us

By E. A. Quarles

SOME time ago the Mayor of my home town asked for sugestions as to the most pressing needs of the street trees of our community. He was advised, among other things, that there were scores of large trees on main-traveled streets in our city of 40,000 inhabitants whose structures had become so weakened by decay, due to neglect or improper pruning, that they constituted a menace to life and limb. This particular mayor is a faithful and efficient public servant, and a man who has achieved a large success in business. Had the warning applied to his own business he would have acted promptly. The situation he had to face in this instance, however, involved the psychology of the average home owner, taxpayer and voter. He remarked that a householder raised such a storm when a tree was removed from in front of his residence he could not bring himself to the point of accepting the advice tendered. In less than a week a large silver maple standing on the street on which the residence of the giver of the advice lives, snapped off during a wind-storm. It was prevented from falling across the sidewalk and street by coming in contact with a high-tension electric wire, which, most fortunately, held. One or more lives might easily have been snuffed out had that wire failed to support the tree. Not often is a prophet so fully and quickly justified. The prophet in this instance determined to have a permanent record of that justification. A photograph of the tree was taken and it is reproduced on page 523.

Now, this is a situation which is paralleled daily in some section of our country. A careful study of press clippings covering accidents to persons and damage to property from falling trees and limbs discloses the fact that many are killed yearly, more are maimed, and many thousands of dollars of damage is sustained by property. In a very large majority of our towns and cities the street trees are practically uncared for or the care given is so small and so inexpert as to amount to little or nothing.

Shade trees have an economic, hygienic, and esthetic value. A reasonable expenditure upon their welfare is therefore wholly justified. Every town, village and city should give regular, expert care to its street trees. The first

ONCE BEAUTIFUL TREES, IRRETRIEVABLY MUTILATED BY BEHEADING, OR POLLARDING, AS IT IS SOMETIMES CALLED

step is to constitute a board or commission which shall be charged with the care of trees already planted and shall plan for the development of the community in so far as the street trees are concerned.

Police Powers Needed

The tree commission should be clothed with authority to condemn and take down trees that constitute a menace or a nuisance. They should be given power of arrest with respect to the wanton mutilation or destruction of trees. In the commission should lie the decision as to the planning of the city's tree development.

Success or failure will lie largely in the character of the individuals chosen for the commission. If this barrier be successfully passed, failure may still come if the city administration fails to give proper backing. Again, success can scarcely be achieved unless the public is kept regularly and intelligently informed of work in progress and in contemplation.

Assuming that these barriers have been successfully passed, the next step is a census of the trees of the community, with especial reference to those which are dangerous or worthless. The dangerous ones must be removed or made safe; the worthless, obviously, must be removed. Soil conditions on each street susceptible to tree planting must be ascertained. The width of the various streets must be carefully noted, together with conditions which are especially unfavorable, such as poor soil, smoke menace, leaking gas-mains, and unfavorable wire conditions.

Once a thorough, careful and intelligent survey is completed, plans should be drawn up covering the development of the various streets of the city in so far as the tree problem is concerned. For instance, the American elm is admirably adapted in most instances to broad avenues, while streets that are restricted as to width will better support the Norway maple. The first-named is widely branching in its mature structure, forming a stately cathedral arch when properly placed, while the latter is compact.

A further step is consideration of the establishment of a shade tree nursery. This cannot be universally recommended, but for cities of 25,000 population or more, it would seem to possess advantages which merit at least a careful consideration. In the first place, it is always best to use nursery-grown trees for street planting, because their root development is so restricted under nursery conditions as to make their chances of surviving transplanting much greater than those of trees taken from the forest. There are other advantages, too. Some cities which have established nurseries report a considerable saving in cost over the commercial product. One of the chief advantages of the community-owned nursery lies in the fact that it renders possible at all times the replacing of trees which die with others of like species and size. Other advantages lie in the fact that the inevitable injuries incurred in shipment are largely done away with and transplanting can be done at the proper season with the least possible interval of time between digging up and replanting.

Cooperation with City Engineer

A most important task for the tree commission is cooperation with the city engineer in order to provide the best possible conditions for street trees in sidewalk and highway construction. At the very least, these should provide for an unbroken open space between sidewalk and curb, three feet in width.

Pruning, planting, and spraying constitute the principal work to be done on street trees. Tree commissions are inevitably confronted with the task of deciding whether to build up a force of their own or to employ the services of experts engaged in this work as a commercial undertaking. For some years past the writer has had unusual opportunities of observing results accomplished under both systems. The result of these observations leads

him to the opinion that the employment of experts from the outside gives best results, at least in communities of 100,000 and less. Reputable tree surgery companies have experience, knowledge, and skill not possessed by any one whom a tree commission could ordinarily afford to pay.

Expert pruning constitutes the corner-stone of tree preservation. Every cut made on a tree exposes an area which is subject to infection unless the cut is properly made and is followed by adequate prophylactic treatment. It is one of the tragedies of the shade tree problem that pruning is regarded as something that any one who can handle a saw is capable of doing. Rarely have I seen street trees in any city or community properly pruned; still more rarely have I seen a city employee who d'd not take from two to three times as long to do his work as a real expert would require.

An important part can and should be played by local civic organizations in safeguarding the trees of a community. Particularly should local garden clubs interest themselves. A few years ago certain interests in a New England village determined to let a contract for the paving of one of the main streets—a highway bordered with magnificent old elms, not one less than a century in age. They formed a majestic arch for the better part of a mile and were the admiration of thousands of tourists annually, as well as the pride of the villagers. The local garden club realized that the proposed paving meant the wiping out of one of the community's chief assets and it acted promptly and effectively. Expert examination refuted the assertion that these trees had gone back to the point where they could not be saved. A real battle ensued, but the trees' defenders won.

HIGH-POWER ELECTRIC LIGHTS BURNED THIS FINE TREE, AND TREE SURGERY RESTORED IT
Note the three cavities which were filled and the bracing with rods

THIS TREE WAS BLOWN DOWN BY A MARCH WIND-STORM, AND ONLY A HIGH-POWER ELECTRIC WIRE KEPT IT FROM CRASHING ACROSS THE SIDEWALK AND STREET
There was no external evidence that the tree was hollow

In the preparation of this article, various cities were communicated with in an endeavor to secure information as to their practice and also their views as to necessary developments, based on their experience. Among these was the city of Washington. Most of us have admired the beautiful trees which shade the broad avenues of the nation's capital. The street tree development reflects credit on the responsible authorities. C. B. Wallace, Acting Superintendent of Trees and Parking, writes that they have found the red oak, pin oak, sycamore (plane tree), and Norway maple best adapted to street planting. The city has a nursery of fifty acres. In new planting, trees 1½ inches in diameter, 3 feet above ground, are chosen. There follows a brief outline of the method employed:

SEEKING TO BURST ITS MAN-MADE BONDS, THE TREE HAS CRACKED THE CONCRETE PAVING

Method of Planting Trees in Washington, D. C.

"Tree holes are prepared of a size sufficiently large to contain not less than 63 cubic feet of good soil.

"The spaces are of oblong shape, 7 feet long, 3 feet wide, and 3½ feet deep. The shape of this hole has nothing whatever to do with the growth of the tree, but simply enables the laborer to work to good advantage. It is, however, very important that a depth of 2½ feet be adhered to. The size of the hole can be diminished slightly on filled ground. The holes are filled with the best top soil that can be obtained.

"It is the practice to plant the trees along the streets shortly after they are lifted from the nursery rows. Care is used in digging these trees, and as many roots as possible are obtained in order that they may have a good chance to withstand transplanting to their permanent position on the streets. As soon as a tree is planted, it is surrounded with a wood box or iron tree guard for protection against accidents and to act as a support.

"The boxes are fastened securely by driving chestnut stakes on each side of the frame in a slanting direction. The tree is then fastened by leather straps passing around the stem and nailed to the top frame of the box."

Mr. Wallace suggests that large tree holes and frequent cultivation of the ground are two of the greatest needs of street trees, and gives the following in reply to a query as to the best method of arranging street and sidewalk so as to give trees the greatest possible chance:

"The space between the curb and sidewalk should be not less than six feet. In selecting trees for the street, careful consideration should be given relative to their spreading nature. Such trees as the oaks and elms should not be planted along narrow streets, because at maturity it is usually necessary to severely prune and disfigure them in order to prevent their interference with private property. No greater mistake can be made than to plant trees under conditions where it will be necessary to severely butcher them in a few years, and leave a blot on the landscape. A tree planter must have foresight and picture his street a hundred years ahead and be sure that he will not be condemned for poor judgment after he is gone."

In Washington, leaking gas-mains have caused the death of thousands of trees; salt water poured forth indiscriminately from ice cream freezers is a major menace, as is also "injury to roots by plumbers, curb setters, conduit layers, and occasionally linemen. Persons responsible for injury to the shade trees of this city are vigorously prosecuted when they are caught." Mr. Wallace writes further:

"The general opinion concerning the oaks was that they were of very slow growth. Some believed it would be many years before they would furnish shade when planted on the streets. Experience has shown, however, that the pin and red oaks which now are being used extensively on the streets of this city grow much more rapidly when well planted than do the hard-wooded maples, i e., Norway and sugar. The coloring of their leaves in autumn and their stalwart growth have made them more popular than any of the other trees now on the streets. They have never been attacked by insects of any kind, and there is little or no breakage by storms. The cost of their trimming is so small as to be not worthy of mention.

"The pin oak is found generally growing in low, wet ground, and for a time it was thought that they could not be planted with any degree of success on the streets, so such planting was not considered favorably. Because of their great beauty, however, it was decided to try them and the first were planted about twenty-three years ago. Some were planted in hard, dry, gravelly soils, as well as in more moist and heavier ground; and that they have done as well in one place as in another has been demonstrated fully."

The country's capital has no factories and hence small menace from smoke and fumes. In industrial centers, however, these are usually among the chief inimical factors. To these should be added the chewing of bark and wood by horses, scraping by automobiles, and wilful mutilation by persons, chiefly by carving with pocket knives. High-tension electric wires cause damage by burning when they come into direct contact with tree structures. In some cities oil and tar have proved major menaces.

How the Nursery Operates

The operation of Washington's nursery is interestingly described as follows:

"Trees planted on the streets are grown from the seeds of the old ones. The time for gathering and sowing them varies. In May, elm seeds are gathered and sown; Norway and sugar maples, about the first of November; acorns from the oaks, as soon as they ripen in the fall; and seeds from the American linden and gingko during the same season. The sycamore seeds are gathered from imported oriental plane trees on the United States Capitol grounds about December 1, and are sown during

the period from March to April 15, as the weather will permit.

"After the young trees or seedlings reach a height of 18 to 24 inches, they are transplanted from the seed beds to nursery rows 6 feet apart, and set 6 feet from each other in the rows, thus giving sufficient space for them to thrive and become perfect for use.

Cultivation Prunes Roots

"While standing in these rows, they are cultivated regularly. This cultivation keeps the ground in fine condition to absorb rainfall, and at the same time cuts the roots and prevents their crossing from row to row. Where these roots are cut, they throw out rootlets closer to the tree, so that when the tree is lifted, the majority of the roots which extend on the sides of the row are not injured, only those on the two sides of the tree in the rows being mutilated to any extent. This constant and regular cultivation takes the place of root pruning, frequently practiced by nurserymen and others, and saves the cost of transplanting several times in the nursery before setting the trees out in their permanent position on the streets.

"During the time the trees are growing in the nursery, attention must be given to pruning and training them. The operations required in this line will have for their object the preservation of a well-defined, central, leading shoot. Should side branches appear to dispute the vigor of growth of this shoot, they should be pruned back, but not entirely removed until later on. The preservation of side branches tends to strengthen the main stem; and therefore they are to be encouraged to a certain extent, but always subordinate to the main stem."

Silver maples and poplars should never be used in street planting. Their soft wood structure does not withstand storms well, and they do great damage through their roots to sewers and sidewalks, filling the one and upraising the other. One city reports that the 23,000 silver maples which once stood in its streets required more pruning than some 75,000 trees of other species. This involved a heavy load in overhead.

Sycamore and Plane Tree Most Favored

Inquiry among our principal cities indicates fairly definitely that the sycamore and plane tree, the latter the old-world form of the former, show best results, all things considered, in the trying conditions that the average large city with a considerable factory area presents. Confirmation is given this in an elaborate tabular presentation of the strong and weak points of the leading species, prepared by Paul H. Davey, director of the research department of the Davey Institute of Tree Surgery. Mr. Davey's investigation was made with a view to determining species best adapted to street use. He designates the plane as "exceptionally desirable."

Qualities and Facts Considered

The qualities and facts considered by him in his investigation included the following:

INSECT ENEMIES OF TREES ARE COMBATED CHIEFLY WITH SPRAYS, THE NATURE OF WHICH VARIES WITH THE SPECIES THAT IS TO BE ATTACKED

Soil required
Moisture requisite
Type of root system
Success in transplanting
Structural strength
Habit—outline of top
Height—top
Width—top
Density of top
Quality of shade
Quality fall coloring
Flowers
Rapidity of growth
Immunity to insects and disease
Resistance to smoke and dust
Shade endurance
Cleanliness
Spacing required
Length of life
Resistance to decay
Response to cavity treatment
Response to pruning
Where best used
Leaf period
Special precautions
General desirability

A contemplation of the foregoing list will indicate to the layman that something more than surface knowledge is required of him who would give adequate care to the trees on city streets.

Cavity work on street trees cannot be universally recommended, though it is important in certain circumstances. It should be employed principally on young hardwood trees at the very inception of decay, just as one acts wisely in having his dentist attend to the first evidence of decay in a tooth. Again, specimen trees which are irreplaceable merit cavity treatment. Treatment of decayed areas in trees consists of removal of every vestige of decay, disinfecting and waterproofing and filling with concrete placed in sections to avoid cracking when the tree structure sways

Fungi Are Destructive

Of course, street trees should be sprayed as a protection against both insects and diseases, the latter induced by microscopic spores of various fungi lodging deep in the cracks of exposed wood and causing decay by progressive breaking down of cellular tissue, much as does cancer in the human body. Here, again, expert knowledge of the insects and fungi concerned and of their controls is essential. Replies received from the more active tree departments of our larger cities list the following as the chief insect enemies of street trees: tussock moth caterpillar, aphids, various scales, elm leaf beetle, and many boring insects.

There is a gradual awakening to the value of shade trees on streets and in parks. If one contrasts the public attitude of ten years ago with that of to-day, there is reason for encouragement. Let us hope that with an awakening interest there may come better discretion in the selection of the caretakers of our community trees than exists to-day.

Home-made vs. Standard Fire Apparatus

THE question is frequently raised as to the merits of home-made fire apparatus as compared with standard fire-fighting equipment. The following discussion of this subject, reprinted from the August, 1925, issue of *Colorado Municipalities*, the organ of the Colorado Municipal League, will interest many readers of THE AMERICAN CITY MAGAZINE:

"In view of the fact that several cities have built or assembled some pieces of home-made pumping equipment and other cities may be considering doing likewise, it seemed desirable to obtain from the Mountain States Inspection Bureau authoritative information on the subject.

"In the first place, every city is given credit for every piece of usable fire-fighting equipment which it owns, but the deductions which are made for condition, reliability, adequacy, etc., may result in effecting a considerable reduction in the original credit. For example, the maximum possible credits allowed on pumping equipment in the grading schedule of the National Board of Fire Underwriters is 300 points. The maximum deductions which may be made might total 190 points, or practically two-thirds of the original credit as follows: condition and reliability 40 points; fire methods 50 points; motive power 50 points, and requiring extra man 50 points.

"The deductions for condition and reliability are made because it is seldom possible to subject the home-made pumping equipment to the same rigid tests which are required of standard pumping equipment. Standard pumping equipment is required to pass a 12-hour test conducted by the National Board of Fire Underwriters. The test consists of pumping a stream of 120 pounds pressure for 6 hours, at 200 pounds for 3 hours, and 250 pounds pressure for 3 hours. A piece of pumping equipment which has not passed this test is graded as unreliable, because it is not possible to tell whether it could pass the test or not. It is known that some of the pieces of home-made pumping equipment could not pass such a test due to inability to deliver water at the required pressure or due to failure to operate continuously for such a long period.

"The great advantage therefore of purchasing standard pumping equipment which has passed the very rigid tests of the National Board of Fire Underwriters, is that in all probability such equipment can be depended on to function properly in case of fire. While not every piece of standard pumping equipment is given the 12-hour test, yet it is manufactured under conditions which result in producing a product of uniform quality. It is customary also to require each new piece of standard pumping equipment to pass an acceptance test of 3 hours' duration under which it is required to pump a stream of water at 120 pounds pressure for 2 hours, at 200 pounds pressure for ½-hour and at 250 pounds pressure at ½-hour. Similarly other parts of standard equipment are subjected to tests prescribed and conducted by the National Board of Fire Underwriters so that a city is offered a real protection against the purchase of poor and unsatisfactory equipment if it buys only equipment which has been passed and approved by the National Board of Fire Underwriters."

Forward Steps in Municipal Affairs

Minnesota Villages Avail Themselves of the Arterial Highway Law

BIWABIK, MINN.—The village of Biwabik was one of the first municipalities to avail itself of the opportunity to adopt an ordinance under the so-called Arterial Highway Law, passed by the 1925 Legislature of Minnesota, which provides that local authorities may designate through-traffic streets or highways and require all approaching vehicles to come to a full stop before crossing or turning into them. The ordinance as adopted by this village reads in part as follows:

Section 1. That all of Main Street (sometimes known as Front Street) which is within the platted portion of the village of Biwabik, together with that portion of the east and west paved extension of said road to the east and west boundary lines of the village limits, together with that portion of all avenues, which portions are immediately in front of all alleys within two hundred feet of Main Street, are hereby designated as through-traffic streets in the village of Biwabik, Minnesota, for the uses and purposes of vehicle traffic thereon.

Section 2. Every person operating or driving a motor vehicle on any street, avenue, alley, parkway or roadway leading onto, crossing or intersecting such designated through-traffic streets in the village of Biwabik, shall, when approaching such through-traffic streets, or portions thereof which have been designated herein, cause such motor vehicle to be brought to a full stop, and shall thereafter proceed to enter upon or across the said designated through-traffic street in accordance with the requirements of the laws of the state of Minnesota, provided that such stop shall not be made upon any cross-walk or sidewalk on such designated through-traffic streets in such manner as to interfere with the free passage of pedestrians thereon, and provided further that the provisions of this ordinance shall in no way govern or affect the regulation of traffic at those intersections where a traffic officer is on duty and actually in charge.

Biwabik is one of fifteen or more municipalities, varying in size from 500 to 20,000 population, which stretch across northeastern Minnesota from east to west for a distance of about one hundred miles. These communities are connected by a paved highway, and, pursuant to an agreement between them, each is adopting the arterial highway system, to create uniformity for their own protection and for the benefit of the many tourists who use this through route. The argument that the law in question makes a race-course of the arterial highway is, we believe, not well founded, provided that police officials are insistent in enforcing speed regulations.

Many school children daily cross the Biwabik arterial highway, and the danger of accident to them is considerably lessened by the new law. There have been no accidents on the highway in this village since the enforcement of the ordinance.

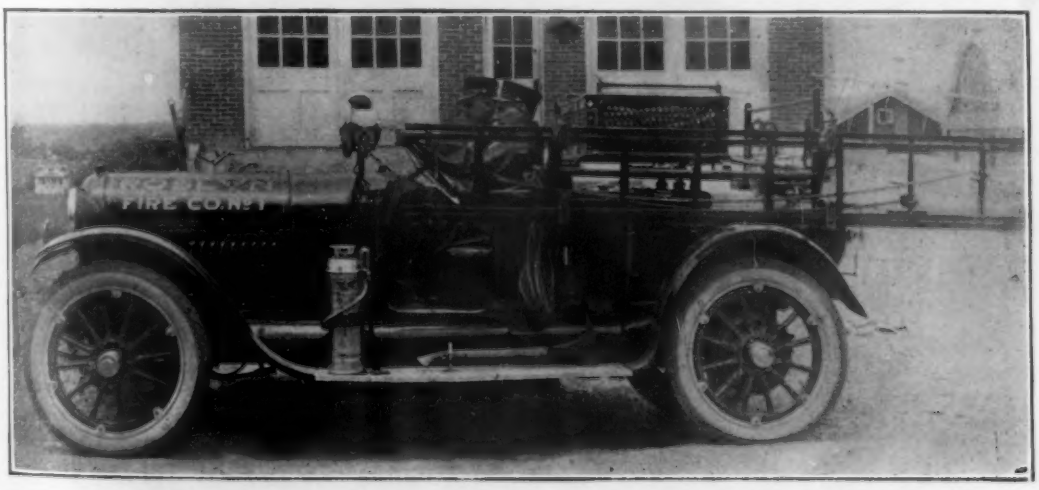
L. R. CHRISTENSEN,
Village President.

A Piece of Home-made Fire Apparatus

ROSLYN, PA.—For extinguishing small fires, or for checking the flames until water lines are put in operation, the Roslyn Volunteer Fire Company No. 1 finds that its new home-made chemical truck, illustrated herewith, meets its needs very adequately, and the members who helped in its construction are proud of their job.

Having in mind a swift, light-weight chemical engine, to be manned by two or, at the most, three men, some of the members of the company set out to build their own apparatus, using a seven-passenger Paige touring car as a foundation. After removing the body and wind-shield, leaving only the front seat, dashboard and hood, front fenders, and running-board, Fire Chief Kraft and Trustee Hall drew up a rough sketch of the proposed new apparatus, showing dimensions. This was submitted for criticism to a local truck builder who had had experience in the construction of fire apparatus, and, his approval of the design having been secured, actual work on the engine was started at his plant.

A box with steel doors on each side was built across the chassis to the rear of the front seat,



THE HOME-MADE CHEMICAL TRUCK OF THE VOLUNTEER FIRE COMPANY, ROSLYN, PA.

and this provides ample space for twelve acid bottles and press-top tin cans for acid and soda recharges, small containers for extinguisher recharges, as well as rubber coats and helmets.

From the Philadelphia Fire Department, through the kindness of Chief Ross Davis, we received a contribution of two 35-gallon Holloway copper tanks. lanterns, and a hose-basket taken from an obsolete horse-drawn chemical and hose truck. Two extinguishers, made by the Elkhart Brass Company according to our specifications, are mounted one on each running-board, held by Seagrave patent holders. An American-LaFrance ladder bracket carries a 20-foot extension ladder, and Seagrave pike-pole holders were used. Rear uprights, a cross-member and tie-rods complete the structure. Seagrave lantern brackets, attached to the rear uprights, hold a red and a white lantern and a spotlight to be used for illuminating any operations at the rear of the car. The wind - shield brackets serve to carry a 10-inch bell (donated by Fire Company No. 1 of Weldon, Pa.) on one side and a searchlight on the other side.

Other pieces of equipment are a Bridger electric fire truck siren, a Montgomery County Firemen's Association Fire Flasher, 250 feet of ¾-inch Eureka chemical hose fitted with a one-handle automatic shut-off chemical nozzle, and axes mounted on one of the running-boards and at the rear of the hose-basket.

The finished product is a practical and effective piece of fire-fighting apparatus.

FRANCES G. HALL, Jr.
Trustee, Roslyn Fire Company No. 1.

IN MEMORY OF THE VOLUNTEER FIREMEN OF ELIZABETH, N. J.

Bonds Voted to Complete Park

FLORENCE, S. C.—By a vote of three to one, the citizens of Florence, in a recent special election, authorized the City Council to issue notes in the sum of $40,000 to finance the further development of Mars Bluff Park.

Since its purchase by the city about two years ago, this 25-acre tract has been improved through grading, the seeding of the lawn areas, etc., and the program of developments now to be undertaken, for which plans have been drawn by E. S. Draper, landscape architect and engineer, of Charlotte, N. C., and Atlanta, Ga., provides for a large modern swimming pool, the excavation of the lake area, an open-air theater, walks, and shrubbery and other decorative plants. To the fine collection of native trees which are now to be found on this site will be added many rare and valuable specimens that have been contributed for this purpose.

For the success of this park project, the people of Florence are indebted largely to the Chairman of the Park Commission, B. S. Meeks, who has been untiring in his efforts for its promotion.

CHARLES W. MORRISON,
Secretary, Florence Chamber of Commerce.

EDITORIAL NOTE.—For a description of the preliminary work on this park development project, together with a reproduction of the general plan of the park, see pages 447 and 448 of the November, 1924, issue of THE AMERICAN CITY.

Statue to Volunteer Firemen

ELIZABETH, N. J.—A striking bronze monument representing a volunteer fireman ready for action was unveiled in front of the court-house at Elizabeth on Columbus Day this year. This statue was purchased with a fund of $10,000 raised by popular subscription for the purpose of erecting a lasting symbol of appreciation of the work done by the volunteer fireman in this city prior to the organization of the present paid Fire Department of Elizabeth.

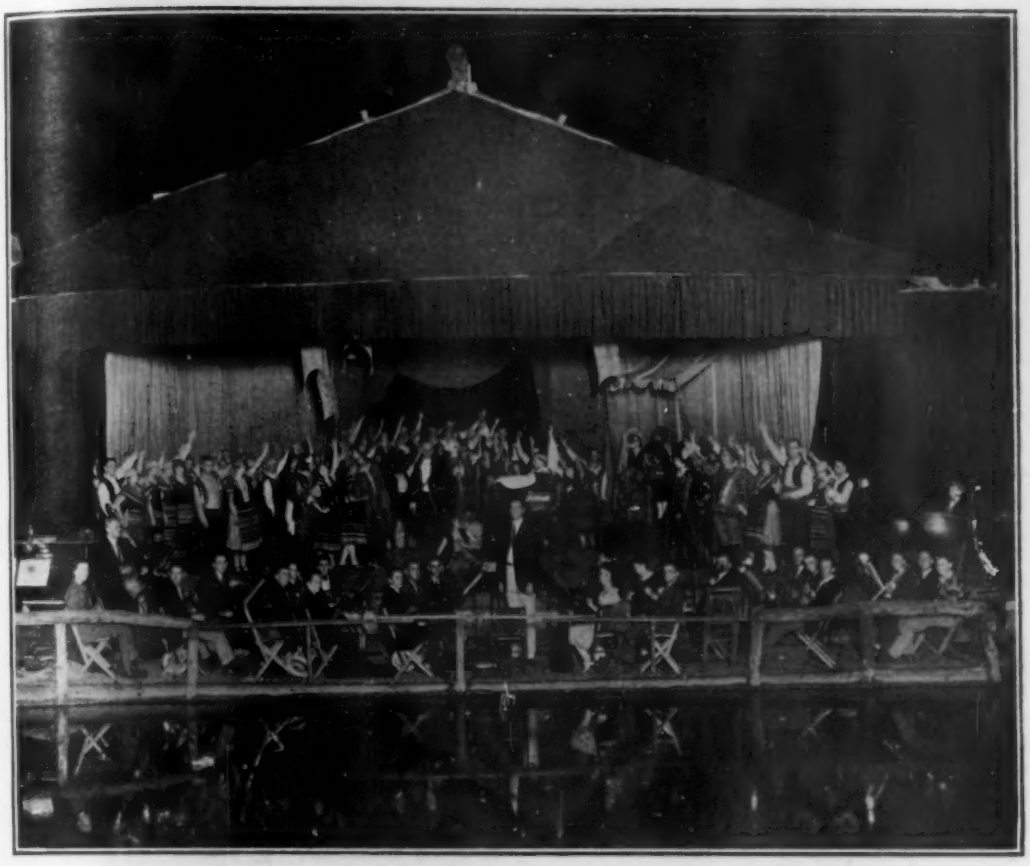
About 1,500 veterans and active firemen, including delegations of volunteers from a number of neighboring communities, joined in a parade preceding the unveiling ceremonies. The marked contrast between the antiquated fire-fighting apparatus hauled by the volunteers and the highly polished motorized apparatus of to-day was of particular interest to the spectators along the route of the parade.

AUGUST GERSTUNG,
Chief, Fire Department.

Summer Civic Opera in Salt Lake City

SALT LAKE CITY, UTAH.—For the second time in Salt Lake City, civic opera proved eminently successful this year as a community project. In the summer of 1924 and again this year, this city of 130,000 people has gathered together from among its amateur musicians a community operatic company, has given the members from five to six weeks' training, and has then produced for a whole week, at the attractive water theater in Nibley Park, one of the classics of light opera.

To the City Recreation Department belongs credit not only for the inception of this idea but for the successful carrying out of the plan. An advisory committee, made up of about twenty local civic-minded musicians, has been appointed each year by Mayor Neslen to assist the Recrea-



SCENE FROM "THE GONDOLIERS," AT THE WATER THEATER, SALT LAKE CITY

tion Department in the training of the 100 to 125 members of the civic opera company.

Any amateur in Salt Lake City is eligible, and the chorus and principals have been selected each year after a series of tryouts before a group of qualified judges. The music director of the Recreation Department has acted each year as director of the opera. Local dramatic coaches, dancing-teachers, and artists voluntarily gave their services towards the effective staging and costuming of the opera. An orchestra was organized from a selected list of the best amateur musicians in the city, and was diligently rehearsed in the musical score. The Council Chamber in the City Hall was open for rehearsals on all nights when the Council was not in session.

For the first attempt, in 1924, "The Pirates of Penzance," by Gilbert and Sullivan, was the opera selected. The crude stage on the lake in Nibley Park was used, with simple curtains and movable settings, and over 16,000 people enjoyed the performance without cost. About 2,000 others paid a small fee for seats in a reserved section, the proceeds from which covered about three-fourths of the expenses involved in the production. High school girls and boys volunteered their assistance in the making and designing of posters, costumes and scenery, and, with the direction and guidance of an art director, achieved markedly beautiful effects.

This year's production was even more attractive than that of last year. The selection, "The Gondoliers," was a particularly happy one, not only because of its adaptability to the unique setting afforded at the water theater, but in that it called for a considerable number of principal parts. At the suggestion of the advisory committee, those who played the leading rôles in 1924 were not permitted to try for leads again this year, thus leaving the field clear for the development of new material. Two complete casts were selected for the major rôles, so that many young folks were given a chance to participate.

The cost of production was kept at a minimum. Neutral curtains with a little set scenery were used for both indoor and outdoor sets, and lighting effects were attained by floodlights and border lights, no footlights being used. The water, with the lighted bridge spanning the lake, formed the drop. The characters made their entrance in gondolas—rowboats made over and decorated with lights.

It is the plan of the Recreation Department to make the civic opera an annual event, to extend the time for presentation, and to increase the artistic quality of the productions. Over 20,000 people were able to enjoy the performance this year, and it is expected that the seating capacity will be enlarged so as to allow for still larger audiences in the future.

CHARLOTTE STEWART,
Superintendent of Municipal Recreation.

Trend of Water Purification Plant Design and Operation

By Wellington Donaldson
Fuller & McClintock, Consulting Engineers, New York City

AN expression of surprise is sometimes heard regarding the diversity of design and apparent dissimilarity of process at various purification works which have for their common aim the treatment of surface water or ground water. Speaking of the dominant type of purification, namely, the rapid sand plant, this process has been employed for 43 years since its first use for purification of a public water-supply in this country. It is reasonable to judge, therefore, that a considerable degree of standardization may have taken place in that period of development. As a matter of fact, considerable progress has been made in combining the experiences of numerous water purification works in an orderly evolution of this highly important art. In this direction the efforts of various water-works associations, both national and sectional, have borne fruit in bringing together men with different view-points and experiences. In these associations there has been, over a term of years, a more or less continuous effort through special and standing committees to systematize and improve current practices.

The fact remains that considerable diversity of plant layout and dimension of parts still exists. Several reasons underlie this condition, the most dominant one, perhaps, being that natural water itself varies over widely extreme ranges in its physical properties and chemical characteristics. A second reason is to be found in the growing taste of the public for a better quality of water, along with the promulgation of standards defining permissible impurities. These demands have called for a more intensive study of existing limitations and a greater degree of specialization of the individual processes which go to make up the sum total of purification.

Appearance and Layout

Of our water-works as a whole there may be noted an improvement in general appearance, both as to buildings and grounds, over those works of an earlier period, although it is true that a number of the works built 20 to 30 years ago are still conspicuous examples of far-sighted planning. The increasing use of reinforced concrete, steel, brick, and tile has given buildings which are more nearly fireproof. Improvements are to be noted in interior treatment also. Floors of special surfaces, such as tile and terrazzo, now frequently take the place of the plain cement finish. There is a growing tendency to use metal sash in doors and windows in place of wood. The lighting of plants is being done on a more liberal basis.

Referring to the plant layout itself, some of the newer works exhibit more flexibility with respect to basin arrangement, which permits individual units to be taken out of service for cleaning without crippling or greatly disturbing normal operation. This refers chiefly to division of settling capacity into a sufficient number of units operated in parallel.

A conspicuous tendency is that of providing more adequate metering of water-flows. The older plants are greatly lacking in this respect, it being commonly the practice to depend on pump counter readings as the basis of estimating the amount of water handled by the plant. Where the purification plant is detached from the pumping-station and changes in pumpage rates have to be reported by telephone, the arrangement is usually very unsatisfactory for the man responsible for water treatment. A plant nowadays without a Venturi meter on the plant input or output may be regarded as deficient in a vital feature affecting both accuracy of records and economy of operation.

The common practice of chlorinating the filtered water frequently justifies the use of a second master meter for the accurate and convenient control of this process, as instanced by the examples of Baltimore and Grand Rapids, where such metering devices have been installed subsequent to the original plant construction. An extreme extension of the metering idea is that of a recent plant where Venturi meters were placed on each basin inlet to insure equal distribution of flows between various parallel units.

A single master meter probably serves its most useful function when located on the plant input, where it serves to regulate the coagulant dose. The chemicals used as coagulant con-

titute a considerable item of the operating cost, and any economies in their application possible by accurate knowledge of the amount of water being treated are obviously advantageous.

There is evidence that more attention is being paid in plant design to the "central control" idea, which means the placing of metering devices, water-level gages, and other operating aids in locations so as to entail the minimum inconvenience in taking observations and carrying out various plant manipulations. I am not optimistic enough to expect, nor do I believe it desirable, that filter plants will be run by simply pressing buttons on the operator's desk, but I do believe it highly desirable to save the many unnecessary steps and climbing of stairs required in some plants to observe gages and make adjustments to waterflows and chemical applications. There have just come to my attention certain efficiency studies comprising photographs of a light strapped to the back of a workman's hand, the purport being to show lost motion in a particular operation. Applying the same methods; if we could tie a lantern to some of our plant attendants and keep a camera trained on it throughout the working shift, the photographic plate might show astonishing patterns, representing trips to the basement, the attic, the filter room, the outside coagulating tank, etc.

Are You Considering These Points of Design and Operation?

Appearance of plant
Efficient layout
Use of master meters
Electric operation of pumps
Effective aeration where necessary
Use of preliminary sedimentation
Effective operation of coagulating basins
Proper mixing arrangements for chemicals
Advantages of solutions and dry feed for chemicals
Use of air- and water-wash for filters
Satisfactory auxiliary filter equipment
Control of wash water
Proper chlorination
Intelligent plant operation
Adequate records of operation

Read About Them in This Article

The increasing use of electricity in waterworks plants is quite noticeable. Many pumps which ten or fifteen years ago would have been steam-driven are now driven by electric motor. It is now common in filter plants to see wash-water pumps and sump pumps driven by electric motors with automatic equipment for starting and stopping. Electric elevators for handling chemical to storage are practically standard.

A belated appreciation of the comfort of employees is reflected in bettered facilities in the way of lavatories and locker-rooms. In at least two recent plants the comfort of employees has been further considered by providing a kitchenette where a pot of coffee may be prepared and lunch eaten, without having to carry out these highly necessary details on the top of an alum barrel, on the window ledge, or the table where the log sheet is kept.

So much for the general tendencies of plant design. Let us pass now to some of the details of the several processes commonly employed at representative purification works.

Aeration

There is a popular misconception as to the function of aeration found in a large number of plants. The average surface water-supply is not deficient in oxygen and therefore needs none added to it. The benefits from aeration are generally due to the removal of certain gases and organic substances which give the water unpleasant tastes and odors or else affect its corrosive qualities. These effects are characteristic of water containing an abundance of microscopic life, or "plankton," usually referred to loosely as "algæ." In the case of ground waters containing iron or manganese in solution, chemical oxidation is, of course, a necessary preliminary to their removal, although reduction of carbonic acid and hydrogen sulphid may be important also. Sometimes water drawn from the deeper intakes of reservoirs is deficient in oxygen and is helped by aeration. Another use recently advocated for aeration is its assistance in completing coagulation with alum.

An increasing number of purification plants are including the aeration feature, and these devices exhibit a wide diversity of design, so much so that it is difficult to point out the direction of progress.

The simplest and most common type of aerator is the vertical "riser pipe." In some of the older works a single aerator of this type constituted the chief "spectacle" of the plant, obviously more ornamental than useful. Installation of the "riser pipe" type now takes the form of multiple outlets, thus subdividing the flow into thinner sheets. Auxiliary pans, shelves, or steps to increase the spattering effect are commonly used and may be solid, perforated, or slotted as in the Oklahoma and

Little Rock aerators. A number of other interesting aerators have been installed within the last year or so. The softening plant at South Pittsburgh, Pa., has secured thin weir action by multiple spilling-troughs set at a common elevation, and utilizing only a low head. Another type of aerator with low head requirements is the "riffle board" used at Cambridge, Mass., along the lines of those at New Brunswick, N. J., Chester, and Norristown, Pa. Installations of aerators utilizing somewhat more head than the foregoing are the cascades designed for Norfolk, Va., and Tulsa, Okla., where distribution is by an elongated spilling-flume to a series of steps on a double slope. The multiple spilling-trough aerators used at Excelsior Springs, Mo., and Topeka, Kans., are interesting examples of thin sheet distribution, the spilling-pans being arranged in cascade fashion to secure successive drops.

Several iron-removal plants in Ohio make use of a stack of separated coke trays. The same principle is embodied in more elaborate form as a separate enclosed structure at Memphis, Tenn., in connection with iron removal.

Where head is available without pumping or where increased efficiency over other types of aeration justifies it, spray nozzles have been installed. The Catskill supply of New York City, where gravity head is available, is the foremost example of spray aeration. At Whiting, Ind., where there was much trouble with taste on account of petroleum and other industrial wastes, spray nozzles are used. The recently completed plant at Richmond, Va., has a bank of spray nozzles to handle 30 m.g.d., installed in preference to other types of aerators on account of sulphite waste pollution. The iron-removal plant at Long Beach, N. Y., uses spray nozzles of special design with good effect.

The necessity of aeration has not been felt so much at the western plants, where the supply is usually from turbid streams, as in the East, where the waters are clearer and more subject to both industrial pollution and microscopic growths. The new Oklahoma City plant, however, includes both primary and secondary aeration, to obviate expected trouble from microscopic growths.

The recent experience of several Canadian towns with aeration by diffusion through porous plates has indicated the effectiveness of this method in odor and iron removal, though data are not yet available for comparison with other methods.

Plain Sedimentation

For plants handling extremely muddy water containing, say, from 20 to 40 tons of suspended dry solids per million gallons, particularly those of the Middle West and Southwest, the advantages of preliminary sedimentation before application of coagulant have been well recognized for some time. Pre-sedimentation saves chemicals and extends the usefulness of coagulation basins by increasing the period between cleanings. It is not generally recognized, however, that further specialization of preliminary sedimentation is sometimes desirable for removal of the coarser portion of the suspended solids. An instance is recalled of a plant in the Mississippi Valley, where during the freshet period each year the pre-sedimentation basin became so filled with heavy silt that one could walk on the surface of the deposited material without getting his feet wet. Obviously, in a situation of this kind some process is justified ahead of the pre-basin to take care of the coarser material in a more or less continuous manner and thus prolong the usefulness of subsequent settling processes. The provision of relatively small grit chambers with well-sloped bottoms and facilities for ready cleaning, is one solution for such conditions. Several plants handling very turbid waters are considering for this purpose clarifier devices with mechanical means of removing the sediment as fast as formed. The new works for Kansas City, Mo., will employ such a device, and similar designs are understood to have been gotten out for other sizable works dealing with the same problem.

Coagulating Basins

With respect to basins designed for sedimentation after addition of chemical, there has been no remarkable improvement in design. In spite of the universal use of this process as a preparatory stage for rapid sand filtration and in some instances for slow sand filtration also, there exists great diversity of design in respect to dimensions, retention periods, nominal velocities, depths, styles of baffling, and inlet and outlet arrangement.

There is noted a tendency towards improvements in cleaning arrangements. This relates to better slopes at bottoms, more ample outlet valves and pipes. One of the well-known western plants recently completed has provision for keeping the coagulating basins free from sediment by having the basins with a complete underdrain system and means of blowing numerous underdrain lines by individual valves.

The use of mechanical clarifiers for this purification stage has been adopted so far only by softening plants where the precipitate is quite voluminous and difficult to handle in the

usual manner. At the Benton Harbor and South Pittsburgh softening plants these Dorr clarifiers have shown a removal of 90 per cent or better, thus furnishing considerable relief to subsequent processes.

It may be interesting to note here that during the very muddy stage of water in the Missouri River in October, 1923, when all the water plants on the river were hard pressed to furnish a satisfactory supply, those plants which fared the best were ones which used their basin sludge valves judiciously "cracked" so as to waste the deposited mud about as fast as it formed.

Mixing-Arrangements for Chemicals

Much difference in opinion exists as to the necessity of special structures for assuring mixture and reaction of chemical with the water being treated. The special basin or chamber having baffles arranged either of the "up and down" or "around the end" types is admittedly lacking in flexibility to meet variations in water-flows. It has never been very popular in the western country on account of the large amount of suspended solids carried by water, which tends to deposit and break down the baffles. There seems to be a tendency to get away from this type of mixing device as shown by the circular mixing tanks with paddles used in the softening plants at Newark, Ohio, and South Pittsburgh, Pa., and at the Sacramento filter plant. The Topeka plant embodies a combination of "around the end" baffles with mechanical agitators. The Kansas City, Mo., plant, now partly under contract, includes circular mixing and reaction tanks without mechanical agitation.

Chemical Feeding

The use of dry feeding devices for the application of alum, iron, soda, and lime is gaining in popularity over the method of making up the chemical in tanks and feeding the solution by means of calibrated orifice valves. The arguments in favor of the dry feed are: a considerable saving in floor space and in headroom; also readiness to start without waiting for the charge to be dissolved; and less sloppiness. The dry feed would be even more popular if the manufacturers could grasp the advantages from the operator's standpoint of having a single reliable indicator of the rate of feeding, in pounds per hour or some other definite unit. The more or less arbitrary graduations on the several commercial dry feeders are an unsatisfactory substitute for a simple rate scale, as, for instance, furnished with chlorinators. A common defect of the commercial dry feeder is the inadequate dissolving arrangement.

Filters

The rapid sand filter is fairly well standardized in its most essential part, which is the sand-bed itself. We do have, on one hand, those who insist on a very fine sand, not over 0.4 m. m. effective size, but there are others equally qualified by experience who say that a sand of larger effective size, say 0.6 m. m., is desirable for average conditions. Perhaps it is a case where both view-points are correct according to local conditions.

The nominal rate at which the rapid sand filters may be best operated is still generally regarded as about 125 m.g.d., although higher rates have been used recently, for supplies less turbid than the average.

In the matter of underdrains the perforated pipe is leading in popularity, although by no means to the exclusion of other designs, as instanced by the recent filter installation at Baltimore, using wooden joists to support the gravel, and at Omaha, where precast, slotted concrete blocks are used. It should be noted that the largest rapid sand filter installation in the country—that at Detroit—has adhered to the older style underdrain system, consisting of brass strainers screwed into lateral pipes. All types of underdrains have primarily the same object, namely, to distribute the wash water with uniformity so that the sand-bed will wash evenly and thoroughly. The secondary purpose of the underdrain system is to permit the water in filtering to find outlet without taking the sand with it. The first requirement is quite difficult to meet, while the second is comparatively easy.

The use of air wash in addition to water wash for rapid sand filters is becoming obsolete, although two important plants within the last few years have incorporated the air wash in additional units, on account of its stated value for local conditions. The inadequacy of wash-troughs was a common feature of many of the older filter installations, but this is a defect rarely noticed now.

Auxiliary Filter Equipment

It is in the auxiliary equipment of filters—"the trimmings," so to speak—that one finds the greatest diversity of design at the present time, due to the expression of individual tastes as to the kind of gages, operating tables, sampling device, etc.

Between the small plant, say with half million-gallon units, having manually operated valves and without controllers or gages, and

the large plants, such as St. Louis and Detroit, having units of 4 m.g.d. equipped with a full quota of operating devices and recording instruments, there is a wide latitude of choice as to filter auxiliaries. It is perfectly feasible to run filter plants without the equipment generally provided, just as it is feasible to operate an automobile without speedometer, ammeter, oil or tire gage, thermometer, etc., but motor-car users generally agree that some accessories besides front and tail lights are desirable and helpful in operating a car. With filter plants, as with automobiles, it is sometimes hard to draw the line between the necessity and the luxury.

The typical rapid sand filter plant is provided with hydraulically operated valves and with controllers for automatically limiting the rate of flow. There is usually a marble operating table for each filter unit and on it are mounted hydraulic valve handles and indicators, together with operating gages. The simplest gages are those which merely indicate the rate of flow and loss of head. Some prefer to record the loss of head, others prefer to record the rate of flow, and there are still others who insist on recording both of these functions either on separate or on combined charts.

The automatic rate controller is found on practically all modern filters. It may be adjusted from the operating table, the operating floor, or the pipe gallery, as desired, according to the particular design selected. Sometimes the filter controller has imposed upon it functions besides that of simply insuring a uniform delivery from the filter. In several plants the controllers are connected with a master device which automatically reduces the rate as the clear-basin fills, and increases the rate as the basin gets empty. There are other master arrangements whereby the rates of all the filter units may be manipulated simultaneously from a central point.

The trouble with giving a mechanical device too many things to do is that it may fail to do some of them. Some of the master devices have given satisfactory service over a term of years, while other well-known installations have been signal failures.

In addition to the usual indicating and recording devices supplied for filter operating tables, mention might be made of the provision at Detroit and at Buffalo of integrating mechanism to summarize the total gallons handled by each filter during its run, with the idea that the actual water filtered is a better measure of the filter behavior than the hours in service, where the rate may be varied.

As regards special fixtures on the filter table, such as sampling pumps and sight devices for viewing the individual filter effluents, no particular trend is noticeable, although one recent well-known plant has made a special feature of such devices. On the other hand, there can be cited a number of well-operated plants where devices of this nature have gone into the discard, on the principle that the information given did not justify their up-keep.

Wash Water

There seems to be a recession from the high rates for filter wash thought necessary a few years ago when the use of air or mechanical agitation was thrown into the discard. Several plants designed for rates of wash above 24-inch vertical rise per minute, find that the beds may be kept in good condition with a wash rate of 18 inches or less.

As a means of keeping better books on the amount of wash water used by the filters and entailing waste, there is a more general tendency towards metering of the wash water, either on its way to the tank or from the tank to the filter. One of the newer filter plants has in addition to the usual meter indicator and recorder on the wash line a special indicator visible in the filter room for showing the rate of wash water. Other plants have lights signaling certain limiting rates. The use of automatic controllers on the wash line is another way of placing a limit on the wash-water rate.

Chlorination

Although there are yet in operation a number of old chlorination plants using hypochlorite solution with excellent results, it is a fact that practically all of the sterilization of our water-supplies is done with liquid chlorine. Favorable comment is heard as to fewer repairs and maintenance costs of the latest type of chlorine-feeding apparatus. There now appears some competition in the field of chlorine apparatus manufacture, and apparently some competition is developing through electrolytic chlorine cells installation, particularly in the West.

Plant Operation

Intelligent operation is even of more importance than good plant design. There are many inadequate plants to-day under intelligent supervision which are producing remarkably good results, while, on the other hand, there are plants excellently laid out and provided with ample facilities which run into serious difficulties simply from lack of the right kind of attendance and supervision. One of the most disappointing things that can happen to any

designing office is to find a year or so after the new plant has been turned over to a municipality that the facilities provided have been abused and neglected or, to say the least, not sympathetically operated. The cure for these conditions is one of education and publicity so that the public will detect and be intolerant towards careless operation.

As the purification processes have become more specialized, there is an increasing demand for better-trained operators—men who not only are conscientious and willing, but have a grasp of the technical details of this problem.

More Records—Less Reliance on Memory

Fewer are becoming those water-works systems whose only records of underground pipes, specials, and valves lie in the memory of the pipe foreman — fine, capable fellow though he may be. Less fashionable, too, are becoming those water purification plants where the operator's only responsibility is to turn out a respectably clear effluent and to hand in sometime during the month or week a statement of the number of sacks of alum used. Uniform operation demands that systematic records be kept of all those features which are subject to variation and which the operator attempts to control. This refers to the changes in rates of flow, adjustments in chemical feed, basin levels, the records of filter washings and lengths of run, meter readings, etc. The well-operated plant finds it advisable to keep a daily log sheet for recording various operations and observed data. The same idea in simpler form could be used with advantage by many of the smaller plants with limited personnel.

Except for a few conspicuous examples, purification plants are lacking in good summarized records of operation to show the salient features in ready form by months or years. In the printed annual reports of water departments, space can generally be found to show the location of fire-hydrants and street valves placed in the distribution system, but there is a disinclination to allot space to the essential data of purification, which are valuable not only as a local record but as a means of comparison with others who have similar prob lems.

ACKNOWLEDGMENT.—From a paper read before the Southwest Water Works Association.

Washington, D. C., Held Liable for Failure to Light Its Streets

THE primary duty of a city to maintain its streets in a reasonably safe condition for travel is emphasized in the case of *Berberich* v. *District of Columbia* (not yet reported) recently decided by the District Court of Appeals. The action was brought to recover damages for the destruction of the plaintiff's automobile which collided with a supporting column of the viaduct of the Baltimore & Ohio Railroad, where it crosses Rhode Island Avenue in the city of Washington. The complaint alleged negligence of the defendant in failing properly to light the under-pass, so as to call the attention of travelers on the road to the existence of the columns. The accident occurred about seven-thirty o'clock on the evening of November 24, 1920. The night was dark with considerable fog and mist, and there was no light to indicate to the plaintiff, traveling westerly, the location of the column, which stood in the direct path of his approach. The driveway, as it nears the column, curves to the north to give clearance to a vehicle, while the street-car tracks continue in a straight line south of the obstruction. The plaintiff who was unfamiliar with the situation, was following this track as a guide and crashed into the column, demolishing his car.

The defence based its claim to the immunity of the District upon the familiar doctrine that in establishing street lights a municipality exercises a quasi-judicial or governmental function, and that the non-exercise or error in the exercise of this function is not actionable negligence.* The plaintiff rested his case upon the primary obligation imposed upon the municipality to keep its streets in a reasonably safe condition for travel, which principle, since the decision in *Storrs* v. *Utica* (1884), 17 N. Y. 114, has been extended to cover all those cases in which, because of some defect, excavation or obstruction, the placing of lights is in fact necessary to render the street reasonably safe under the unusual conditions. This extended principle applies equally in cases where the duty of guarding or lighting is imposed upon third parties by ordinance or by contract, unless in such a case the state by statute has expressly granted the municipality exemption from liability.

*Randall v. Eastern R. R. Co., 106 Mass. 267; Lyons v. Cambridge, 136 Mass. 419; O'Rourke v. Mayor of New York, 17 App. Div. 349.

The defence further relied strongly upon the case of *Wolff* v. *District of Columbia* (1904) 196 U. S. 152, an action for damages to a pedestrian stumbling over a stepping stone at the curb, which was not visible because of insufficient lighting; in which case Justice McKenna in his opinion stated that: "The duty of a city to especially illuminate a place where an object is, or to put a policeman on guard by it to warn pedestrians depends upon the object being an unlawful obstruction." This statement, even if limited to pedestrians, was unnecessarily broad and not essential to the decision in the case.

Justice Van Orsdel in his opinion in the instant case, affirming a judgment in favor of the plaintiff, in holding that the District was liable in failing to provide lighting at the place where the accident occurred, used the following words:

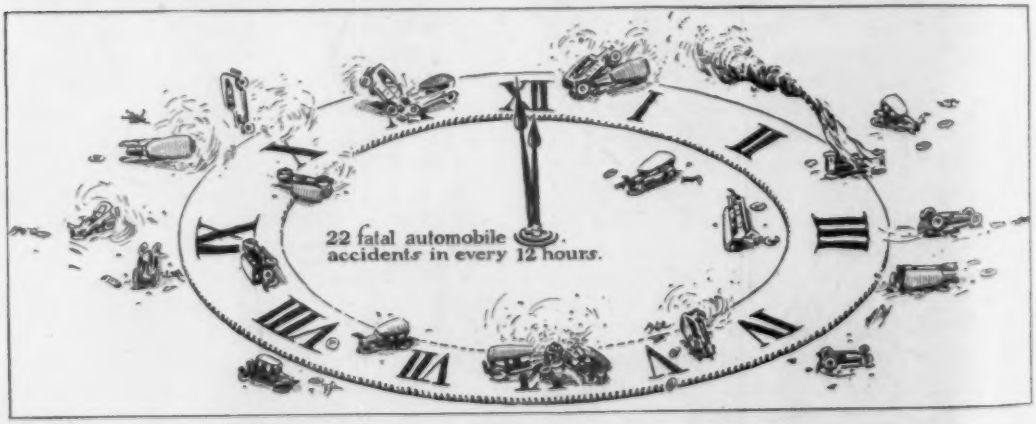
"It is contended by counsel for the District that the municipality is not charged by law with so maintaining its public highways as to safeguard against all accidents. In other words, it is not an insurer against accidents on the public highways. Stress is laid upon the contention that the viaduct is a lawful structure and that no claim is made that it was a dangerous obstruction in the daytime—the complaint being confined to the conditions existing in the night time. While the adoption of a system for lighting the streets is undoubtedly discretionary with the authorities charged with the duty, plaintiff's claim is not grounded upon a defective system; but rather upon a defect in the system at the point where the accident occurred. However perfectly the city at all other points may have been illuminated, it is asserted that at this point of the street the lighting was so inadequate as to create a dangerous situation, the maintenance of which amounted to negligence.

"It is settled law in this District that the commissioners being charged with the duty of maintaining the streets in proper condition are chargeable with negligence in allowing the streets to become unsafe. Unsafe conditions may result from improper lighting as well as from defect in the street, and the degree of lighting required will depend upon the existing conditions. In the present case, as clouds and mist settled in wet and damp weather about this viaduct, the District was charged with the duty of meeting this emergency by proper and sufficient lighting facilities. * * * The jury therefore was not required to pass on the number and character of the lights, but from the evidence whether the lighting at the time of the accident was sufficient to make the place reasonably safe."

The language of the court, if limited in its application to the facts of the present case, where an unusual obstruction, lawful but dangerous at night, is erected in a public street, is supported by the great weight of authority. Whether or not the temporary or permanent conditions in the roadway are so dangerous at night that the absence of lights at the given locality will import negligence per se, the failure to provide proper lights to warn the traveler by night against obstructions or excavations in the highway, of which the city has notice, should be evidence to go to the jury upon the question of the negligence of the city authorities in discharging their duty to keep the streets reasonably safe.

—C. W. Tooke in *National Municipal Review*.

Visualizing the Toll of Automobile Fatalities



Drawing by Arthur T. Merrick

This striking method of visualizing the statistics of automobile accidents and the need for greater safety is reproduced through the courtesy of the Scientific American. As published in that magazine, the cartoon has the caption, "At least twenty-two persons killed for each round of the clock." As a matter of fact, the actual figures are probably much worse than indicated; for the latest authoritative estimate—that of the National Conference on Street and Highway Safety—is that street and highway accidents in 1923 caused a human toll of 22,600 deaths and 678,000 serious personal injuries. This would be about 31 deaths for each round of the clock

Community Centers Functioning Efficiently

By Seymour Barnard

Director, People's Institute, United Neighborhood Guild, Inc., Brooklyn, N. Y.

AMONG the towns and cities throughout this country in which the community center is now playing an important part in the organization of neighborhood activities, the borough of Brooklyn, New York, is prominent as having developed the movement to a particularly high degree of usefulness and flexibility. Under the leadership of the Brooklyn People's Institute, United Neighborhood Guild, Inc., community center committees, made up of volunteer workers, have been formed in twelve sections of this borough, and at the present time as many as twenty-one public school buildings are open after school hours for the wide variety of social and educational activities conducted by these neighborhood groups. The Board of Education has been most liberal in granting permits to the Institute for the use of school buildings for this purpose.

The Board of Directors of the People's Institute undertakes each year to raise about $25,000 for the promotion of this movement in Brooklyn. With this fund a staff of workers is employed—a director, secretaries, and field organizers. These workers are sent into neighborhoods where a demand for a community center has been made known, to advise with the interested men and women of the district as to the best methods of organizing the center. The staff members remain on hand to assist in the initial steps, and are present at the first meeting to help present the aims and ideals of the community center movement. After the center is actually formed, the organizers stand by, prepared to give helpful advice when needed. The centers pay their own running expenses, raising the necessary funds through entertainments, small admission fees for dances and concerts,

The activities carried on are of great variety, being planned to meet the most pressing needs of the districts, according to the judgment of the local committees. They include community dances, socials and parties, clubs, classes, forums, concerts, etc. Over one hundred athletic clubs meet at least once each week in the school centers. Many campaigns for permanent improvements have been undertaken by these neighborhood groups. One of the centers, for example, initiated a campaign to secure a children's playground for its section; another was instrumental in the opening of a branch library in its local school. Many other instances of worth-while endeavors of this character could be cited.

About two years ago the twelve community center committees organized under the name of the Brooklyn Federation of Community Centers, for the purpose of securing united action among the centers on behalf of projects of advantage to the whole borough, and to help spread the community center move-

TENNIS CLUB IN A SCHOOL COMMUNITY CENTER, BROOKLYN, N. Y.

A CHILDREN'S LIBRARY WHICH THE BROOKLYN PEOPLE'S INSTI-

ment. Working together, the People's Institute and the Federation aim finally to bring into every section of the borough the inspiring influence of the community center.

Five Factors of Great Significance

In expressing her personal faith in the work before a meeting of the Federation a short time ago, Mrs. Genevieve B. Earle, President of the People's Institute, presented a most adequate summary of the functions of the community center. In her opinion there are five factors of greatest significance in the movement, and these she outlined as follows:

"1. It gives new value to small homogeneous neighborhoods and finds for the average citizen a useful and happy place among his neighbors, people he knows, and knowing, likes, to work, to play, and to do his share in the common job of making this a better city to live in.

"2. It gives back to the average citizen the realization that he 'counts'—that he counts as much as the better-known citizen of wider influence. He also realizes that the task of being a good Brooklynite—a good American—is relatively simple, interesting, and even thrilling, if he trains himself through his day-by-day Community Center activities for intelligent and alert citizenship.

"3. It has taken the mystery out of city government and has shown that what the politicians like to have the voter believe as intricate, complex, and difficult, is really a series of simple steps in getting things done for ourselves through various public agencies designed for our own use and benefit.

"4. It places the responsibility for good government back where it belongs—on the individual citizen—who no longer 'lets George do it.' His interest in his community needs has quickened, he has learned how to make his needs known, and he knows now how to go about getting them for himself—subways, adequate schools, more playgrounds, libraries, cleaner streets, better police and fire protection, etc. Hitherto, because of our vast area and population, the average citizen has felt remote from his city government and has become discouraged, apathetic, and ineffectual. But this Community Center idea gives each member a new faith that, multiplying himself by the strength of his neighbors, he can work directly with his city officials for anything he considers to the best interest of his neighborhood and his city.

"5. It is a cooperative adventure in democracy, in which we express our community life, encourage the things that add richness and color to our living, gay things as well as serious things, in which we experiment for ourselves, make our own mistakes, our own successes, without outside interference. The value of this Community Center idea is that it is not handed to us by outsiders or experts or politicians, but is developed by ourselves in each community, according to our own local needs, and that it is flexible enough to be different, if necessary, in each community. An eminent writer has said, 'The problem of politics is to adjust the relations of human beings in such a way that each may have as much good in his existence as possible.' This, then, is our challenge. Are we ready for it?"

Conserving the Sight of School Children

AN exhaustive report entitled "Conserving the Sight of School Children" has been presented to the National Education Association by the Joint Committee on Health Problems in Education of that organization and the American Medical Association, as the result of a study undertaken with the cooperation of the National Committee for the Prevention of Blindness. There are great differences both in the methods of testing vision and in the definition of defective vision in the schools of various cities and states. The tests usually made in public schools are reported as inadequate. The recommendations are as follows:

1. As it is likely that teachers, nurses and other non-medical school examiners will make many of the eye inspections for some time to come, it is most desirable that the school personnel be carefully instructed in the best methods of conserving sight.

2. The eyes of all pupils should be examined yearly under the best possible conditions by the most skilled persons available.

3. Every teacher should be trained to report to the health division of the schools any abnormal eye condition which may be discovered.

4. There is need for a uniform model law for the examination of the eyes of school children in all states and cities of the United States; adequate powers and sufficient money should be made available for school boards to carry out such a law.

5. Greater emphasis must be placed upon the matter of conserving children's vision, especially from the standpoint of finding and correcting the faulty conditions of vision, providing properly lighted class and work rooms, making special provision through conservation of vision classes for those having seriously defective eyesight.

6. While the care of the physical well-being of the child as far as his school life is concerned, is a duty which devolves upon teachers, nurses, school physcians, and other school personnel, this fact is in no sense to imply that parents are to be relieved of their duties

STREET-CAR WAITING STATION IN THE RIDGEWOOD SUBDIVISION, SPRINGFIELD, OHIO

Games, Birds, and Flowers in a Modern Real Estate Subdivision

By H. S. Kissell

President, The Kissell Companies, Springfield, Ohio

Community Features for Subdivisions

From a paper on this subject, presented at the annual convention of the National Association of Real Estate Exchanges, in Detroit, the accompanying paragraphs are quoted. Other community features in the Ridgewood subdivision of Springfield, Ohio, described by Mr. Kissell, include a private school, organization of a community association, night collection of refuse, Fourth of July celebrations, Christmas trees and carol singing, and numerous recreation features, such as golf, polo and horseback riding, and playgrounds for the children.

AMONG the most interesting recreation features of the Ridgewood subdivision are the illuminated tennis courts. These are used continuously throughout the spring, summer, and fall. They are especially appreciated by bank employees and others who cannot get their afternoons off for golf and other recreations. We have two of the best courts in town with good backstops, and each court is illuminated with four 1,000-watt lamps with proper reflectors, so that there is not a shadow on the courts at night. For several years we promoted a city tournament on these courts, giving a silver loving cup for the city champion in singles and others for the city champions in doubles. Our championship contests were participated in by all the clubs and athletic associations in the city and, with the elimination contests, the tournament extended over a week. All the playing was done at night by electric light, and of course great crowds were drawn to see the contest each evening.

These courts can also be very splendidly used by flooding them in winter time for ice skating. We are in a city without any safe place for ice skating, and the flooded courts, where mothers will know their children are absolutely safe, are really worth while.

Making the Subdivision a Bird Sanctuary

Each spring we send out letters notifying the residents that a certain week will be the Spring Clean-up Week in our subdivision. We always try in these notices to put in something that will be helpful, and in the notice for this spring after we had notified

them of the plans for the clean-up, we put in this paragraph:

"Ridgewood will be more beautiful this year than ever before, and your attention is called to the fact that if you wish birds on your premises, boxes and bird-baths are helpful in attracting and holding the birds. You also probably know that if a cat is kept in the neighborhood, it will be next to impossible to get birds to make their nests in your shrubbery."

When the subdivision was first laid out, we bought a number of bird-boxes, one hundred, I believe, and distributed them to the residents. We then wrote every one a letter telling of our desire to get birds in Ridgewood, calling attention to the helpfulness of bird-baths, boxes, feeding troughs and winter feeding of birds, and also emphasized from the very first the fact that cats in particular made it impossible to secure birds. This was followed by a booklet on birds and gardens which we sent to each resident of the subdivision. It was not long until the birds began to come, and now Ridgewood is a veritable sanctuary. With nearly 200 homes in the subdivision, I do not know of a single cat in the subdivision.

However much people may like cats, most people like birds much better, and we have instilled in them the love of birds. Bird-box contests have followed and this year the schools of the city put on a bird-box contest with bird-boxes of prize winners in one of the large department store windows. Every one in our community is interested in birds and has his particular choice and puts up his particular kind of box and tells the others that his birds have come in the spring. We have even used it in our advertising in the spring by saying that the "martins have come

DAY AND NIGHT VIEWS OF THE COMMUNITY TENNIS COURTS IN THE RIDGEWOOD SUBDIVISION

These courts are lighted with four 1,000-watt lamps for each court

to Ridgewood," and we have featured the birds in every possible way.

Flowers to Newcomers

Two or three things which are small, but which are very helpful and on which I will just touch are as follows:

As soon as a family moves into a new home in Ridgewood, we send them beautiful flowers—roses, chrysanthemums, or whatever is appropriate to the season. These are usually sent on the first Saturday after they have moved into their new home, so that they will be there on Sunday when their friends come to inspect the home. The flowers are always accompanied by a card, "The Kissell Improvement Company welcomes you to Ridgewood." These flowers are often sent two, three or more years after the company has had any real contact with these people. They may have bought the lot a number of years ago and have just built on it, or they may have bought a lot that has been re-sold, or they may have bought a home from some one else and our company may not have come in contact with them at all; but they get the flowers just the same, and one would be surprised at the letters we get in response. It makes them feel at home the first Sunday they are in Ridgewood.

We have had a group of four-colored postcards made and we send packages to each resident of Ridgewood telling them that they may wish to use these cards in correspondence and that they may have others by calling at the office.

We have had the street-car line running through the subdivision named the Ridgewood Line. It carries the name of our addition all through the business section of the town at all times. We have erected in the subdivision very attractive waiting-stations which do not mar in the least the appearance of the subdivision, but add much to its attractiveness. They are used extensively in very hot or rainy weather. These things may seem to be purely advertising matters, but they are things which instill pride in the minds of the people who live in the subdivision, and to that extent I have always thought they could justly be termed features worthy of community effort.

The "Better Homes" Winners

ATLANTA, GA., and Santa Barbara, Calif., divided the first prize given annually by Better Homes in America for the best and most comprehensive demonstration of home improvement for which this organization is striving. Dr. James Ford is Executive Director of the organization, the headquarters of which are at 1653 Pennsylvania Avenue, Washington, D. C. There were 1,900 competing communities, representing every state in the Union.

Port Huron, Mich., winner of the first prize two years ago, was awarded the special prize of $300 for the finest school practice home demonstration in the country.

In Santa Barbara, the local Better Homes chairman was Miss Pearl Chase, Secretary of the Community Art Association. Five homes were demonstrated in Santa Barbara by Miss Chase's committee, all of them being outstanding examples of excellence in architecture and furnishings. Two of the houses of four and five rooms, costing $3,800 and $6,200, were not furnished. Of the others, one contained six rooms and cost $6,100, a second three rooms and cost $1,544, and the third was located on a hillside and contained three separate apartments; this house cost $8,200.

Mrs. Newton C. Wing, who was chairman of the Atlanta Better Homes Committee in 1924 when Atlanta was awarded second prize, was again chairman this year. Atlanta also had a multiple demonstration, showing the public three houses adapted for the use of families of varying walks of life, and two school practice apartments. Two of the homes shown were built for the purpose from plans of the Architects' Small House Service Bureau, and selected by the committee. One of these homes, containing six rooms, was designed for occupancy by a white family and cost $6,750. The other, a four-room house costing $2,150, was in the colored section of the city. It was demonstrated exceedingly well under the direction of a colored subcommittee. All the Atlanta demonstration homes were furnished on a strict budget, drawn up to comply with the average incomes of families of the type for which they were intended. An interesting feature of the Atlanta demonstration was its "Americanization apartment," furnished in the immigrant quarter of the city. There it was stressed to the immigrant portion of the city's population that it was important and desirable for them to retain, in their adopted country, their native arts and handicrafts, pottery, and the like.

In Port Huron, under the leadership of Miss Elizabeth Carlisle, head of the Civics Department of the Washington Junior High School, a notable triumph was achieved two years ago in carrying off first prize. This year, under the same leadership, a Dutch-Colonial house, of five rooms and costing $4,811, was demonstrated, the students of the school having a hand in planning the house, the city architect supervising and completing this work. Students tore down the old house which stood on the site of the new demonstration home, and vocational students in the high school assisted in much of the work of putting up the house, such as the electric wiring, plumbing, and so on. Pupils of the school selected the furnishings of the house, all of which were donated by local clubs, other organizations, and individuals.

"Safety Playgrounds" in Residential Blocks

By Herbert D. Mendenhall, C. E., B. S.
Consulting Engineer, Lakeland, Florida

SOME months ago there came out in the *Florida Engineer and Contractor,* an article by Chas. H. Ruggles of West Palm Beach, in which he proposed a new idea for city block arrangement, with streets for traffic running as usual, but with residences facing inward, and yards, parks, and especially playgrounds, in the center of the blocks. The primary object of this scheme was protection from the danger of automobiles.

The idea as a whole was a little too idealistic to spring on the ultra-practical public exemplified in the real estate developers of Florida, but it was decided to spring it in a modified way in homeopathic doses on one of the most progressive, and to watch results.

With numerous misgivings, a small playground in the center of a triangular-shaped block was laid out in the preliminary study of a subdivision, and presented for approval.

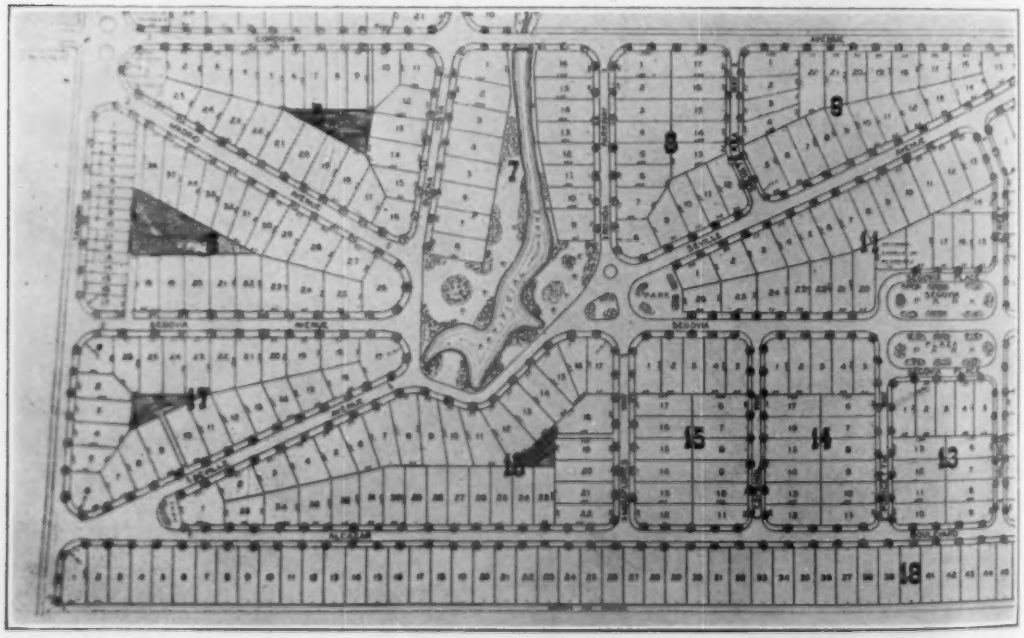
To bolster up arguments in its favor, it was shown that a street laid out to render available this central area for ordinary development, would occupy more space and cost more to improve than the value of the area appropriated for the playground. The soundness of the argument may be doubtful, but it helped to get results.

Whether the avarice or the altruism of the owner was appealed to is not known, but the scheme was favored and several such areas were included in that subdivision.

Emboldened by this success, the idea was suggested in another subdivision, and again the owner approved.

In a third one the "safety playground" feature was made one of the principal advertising points, and an expert landscape architect wrote an article in one of the local newspapers, commending the idea and congratulating the realtors for being so progressive. The engineer who developed the idea was not mentioned.

From that time the idea has been developed with increasing frequency, until now it is being used by nearly a hundred different high-



PART OF THE RIO VISTA SUBDIVISION, PUNTA GORDA, FLA.
Showing four triangular "safety playgrounds" and other recreational areas

class subdivisions in southern Florida.

The practical application of the safety playground to date has been to apportion an area within the center of a block for the use of the children within that block. This area is usually in the form of a triangle 75 to 100 feet on its base by 150 to 200 hundred feet in length, with an average area of about 7,500 square feet. A 10-foot roadway or entrance is provided, in case it should be necessary to drive a truck in with playground apparatus of any kind.

Such an area seems rather small, and actually is too small for baseball or football, but it is about all that the avarice—no, I mean thrift!—of the average developer will permit, and it really suffices for the energies of the children of one block.

The accompanying cut illustrates reasonably well the layout of the typical safety playground. This was one of the first in which the scheme was tried. In other subdivisions there have been worked in a larger percentage of playgrounds.

It is the hope of the writer that the idea will become so popular that it will ultimately develop into providing a well-defined esplanade through the center of all blocks, excluding the automobiles from them entirely and thus providing attractive safety zones, not only for the use of the children, but for beautification as small parks on which to face the residences. In this event, the residential streets will be utilitarian solely, with the residences backing up to them, and with the private garages abutting the streets as part of the back of the main house. With this achieved, the conservative old Charlestonians, with their tall garden walls, and ends of their houses bordering the streets, will finally be vindicated, and the death rate among children from automobile accidents will be greatly reduced.

"'Tis a consummation devoutly to be wished."

EDITORIAL NOTE.—See also articles by Jacob L. Crane, Jr., and Noulan Couchon, on "Recent Theories in Street and Block Planning," in THE AMERICAN CITY for August, 1925, pages 143-146.

Directional Signs and Open Spaces at Traffic Junctions

By Arthur A. Shurtleff
Landscape Architect, Boston, Mass.

THE AMERICAN CITY's readers may be interested in some tentative conclusions which have been reached regarding traffic signs and the handling of traffic open spaces at street junctions. These conclusions are not final, as studies are still in progress by the Selectmen of the town of Milton, the Planning Board of that town, the Commonwealth of Massachusetts Board of Public Works, the Commonwealth of Massachusetts Metropolitan District Commission, the Police Department of the city of Boston, and myself. We have been studying these topics for considerably over a year with special regard to the town of Milton, through which pass important thoroughfares of the state, district, county and town. Comments and suggestions will be welcomed. The following brief notes are in the nature of a progress report.

LOCATION OF DIRECTIONAL SIGNS

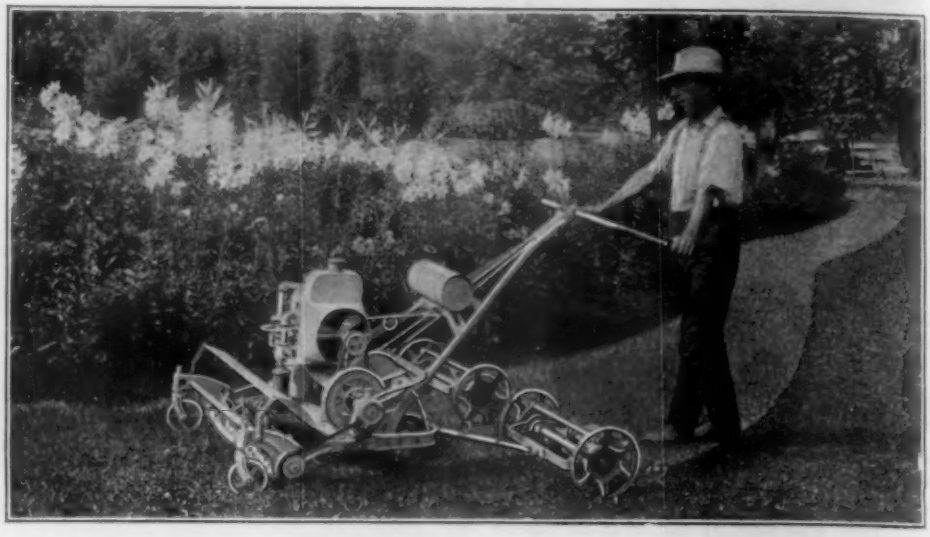
Directional signs should be eliminated from street junctions and should be placed at a distance of 200 or 300 feet from such junctions, so that the drivers of motors may be informed regarding the approaching turns on reaching junction points, may give their entire attention to the handling of their cars and may not delay traffic or add to traffic dangers in the attempt to find and to read signs.

SIZE, HEIGHT AND COLOR OF SIGNS

Long-distance directional signs should be yellow in color with black lettering (4 inches high, all capitals). The signboards have a uniform length of 5 feet with the lower edges 6 feet from the ground and set on the edge of the traveled way at an angle of 15 degrees with the traveled way. The signs are set near the traveled way and low, so they may be read at night from the side glare of headlights.

LOCAL STREET SIGNS

Local street signs should be painted in black letters on white signboards, set 100 or more feet distant from the street corners.



Ask Your Park Superintendent

What he saw this Motor Lawn Mower and Roller do at the Rockford Convention in September.

HERE'S the Coldwell Motor Lawn Mower and Roller with Detachable Gang Units which your park superintendent saw demonstrated at the Rockford Convention on September 15th. Tests under the most difficult conditions were given this machine, and it came through them all satisfactorily, proving its thorough efficiency, economy and dependability.

Simple in construction and built for ease of operation, it mows close up to and around trees and shrubbery, along walks and borders, giving a close, clean swath which requires no after trimming with hand mowers.

With the new detachable gang units, which can be put on or taken off in a minute, the cutting capacity of the Model "L" is increased from 25 to 60 inches. More than twice the cut at half the time, labor and expense. With one Model "L" and gang units, one man can easily complete 10 acres of mowing and rolling in a day. Upon request, we shall be pleased to have our nearest dealer demonstrate on your grounds. No expense to you, of course. Detailed literature will also be sent.

FACTORY BRANCH:
319 South West 5th St.,
DES MOINES, IOWA.

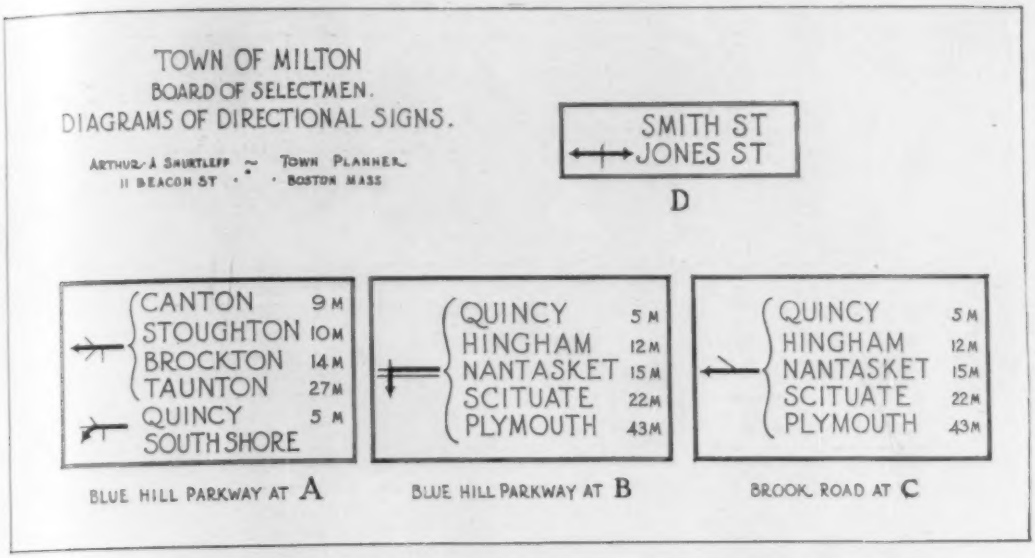
COLDWELL

DEPENDABLE LAWN MOWERS

HAND—HORSE—MOTOR

FACTORY BRANCH:
4139 West Kinzie St.,
CHICAGO, ILLINOIS.

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.



The most complicated junctions were picked out for these signs, in order to give them the severest kind of test. The system of directional arrows shows the considerable complexity. The sign for "B" relates to one side of a double-barreled road. The sign at "D" is a local street sign which tells the motorist that he is on Jones Street and that the first cross-street, crossing both right and left, is Smith Street. This sign is white with black letters, but all the others ("A," "B," and "C") are yellow with black letters

SYMBOLS OF DIRECTION

The accompanying tracing shows copies of typical signs intended for complicated street junctions, indicating with arrows the streets forming the main route which is to be followed. Arrows turning upward mean streets turning to the right, and arrows turning downward streets to the left.

Signs of this kind have been erected in the town of Milton by cooperation of the authorities mentioned above. Existing signs are not to be removed, however, until the new signs have been tried out and modified, if necessary, to make them more effective.

VISIBILITY AT TRAFFIC JUNCTIONS

At all important traffic junctions clear visibility is to be secured for a distance of 100 feet measured from the intersection point of the roadways, and involves setback of buildings and the removal of trees, shrubbery, walls, embankments and other features interfering with clear view. These decisions have been reached in the case of street junctions of the town where many accidents of a serious kind have taken place. Owners of property abutting dangerous corners are cooperating to remove obstructions to visibility, and in several cases are giving land to secure desirable navigating space.

NAVIGATING SPACE AT JUNCTION POINTS

A clear space for the navigating of motors is to be secured at all junction points. This space is to have a radius of 40 feet measured from the intersection of center lines and in many cases will involve the taking of land. In several cases landowners have already given land for the purpose.

Traffic Courts Urged to Study Chronic Reckless Drivers

THE Politics and Psychology Section of the recent National Conference on the Science of Politics at Columbia University, of which Prof. L. L. Thurstone, of the University of Chicago, was Chairman, has indorsed a proposal to urge municipal authorities to establish bureaus in connection with traffic courts, where drivers repeatedly involved in accidents or charged with reckless driving may be referred for medical and psychological examination as to their competence and their constitutional and temperamental fitness to guide a motor vehicle.

The examination, according to Dr. W. V. Bingham, Director of the Personnel Research Federation, should include a thorough road test and a searching quiz on traffic regulations, as well as psychological tests of reaction-time with the brake, adequacy of eyesight and hearing, judgment of distance, correctness of reaction under conditions of surprise, and an inquiry into temperamental traits and emotional attitude.

"It would be utterly unfeasible," declared Dr. Bingham, to require such a thorough examination of all applicants for license every year. But whenever a driver, by becoming an accident repeater, has established a presumption that he is constitutionally or temperamentally prone to accidents, the court or the state motor vehicle commissioner should require that he undergo this thorough test.."

Howell Street, Canandaigua, N. Y. "Tarvia B" over old macadam, 1918.

Salvage the old highways—

COMPACTED by years of traffic, old macadam represents a considerable investment. It's sound wisdom to protect this investment.

And here's a way—a way which many commissioners have found practical and economical.

Tarvia Service *Chapter XI*

They salvage old streets by: (1) Tarvia patching and surface treating; (2) widening narrow roads with Tarvia shoulders; or (3) utilizing the old macadam as the foundation for a durable Tarvia top.

This "save-what-you've-got" policy offers a logical solution of the roads problem in hundreds of communities today. Initial cost is low and—

Only economical maintenance is necessary to make a Tarvia street last indefinitely.

Tarvia
For Road Construction Repair and Maintenance

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New York	Chicago	Philadelphia	Boston
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Providence			Buffalo

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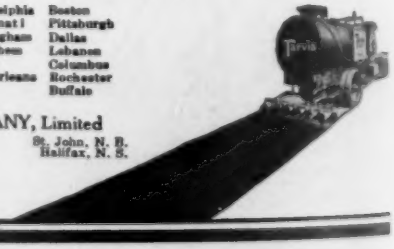


Chamber of Commerce Activities in Public Affairs

New Chamber of Commerce Headquarters

JOLIET, ILL.—The new building of the Joliet Chamber of Commerce is probably the only one of its type in the Middle West. The structure is of Spanish architecture and, including the land and exceptionally fine interior furnishings, cost about $260,000.

On the main floor of the building, surrounding the patio, in the center of which is a sparkling fountain, are the executive offices of the Chamber, two large dining-rooms with a seating capacity of 200 each, a private dining-room which can seat 25 people, a large lounge, beautifully furnished, with an open fire place at one end, card rooms, and a billiard and pool room. On the second floor is a banquet hall having a seating capacity of 1,000.

The Joliet Chamber of Commerce, which was the outgrowth of three former civic-commercial organizations—the Commercial Club, the Association of Commerce, and the Merchants' Association—was formed in April, 1924. At that time a special committee was appointed to secure new members and to sell bonds for the erection of a new home for the organization. After one week's work, the membership had grown to 1,000, and second mortgage bonds totaling $100,000 had been sold. A few months later the foundations of the new building were laid and on July 2 this year it was formally opened. The Chamber is now comfortably settled in its attractive and spacious headquarters.

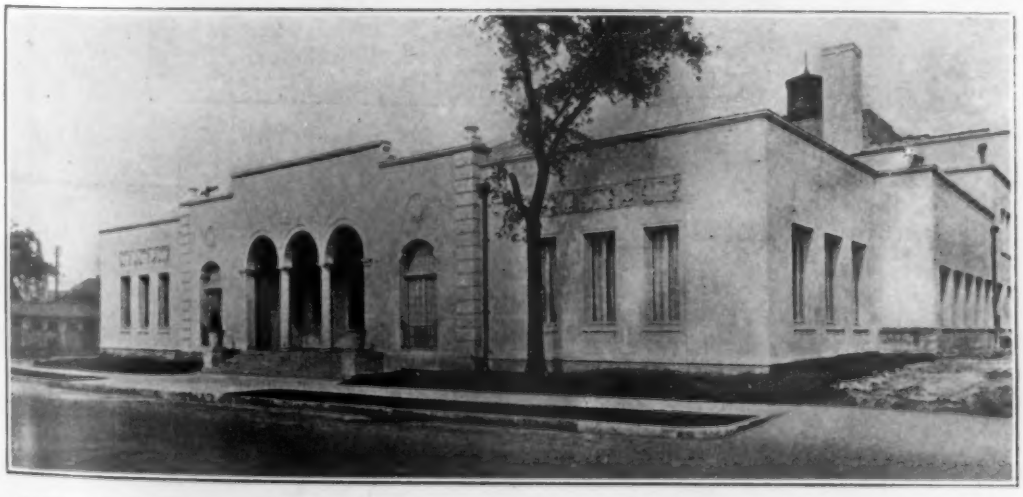
D. H. LILLEY,
Acting Secretary, Joliet Chamber of Commerce.

PATIO OF THE JOLIET CHAMBER OF COMMERCE BUILDING

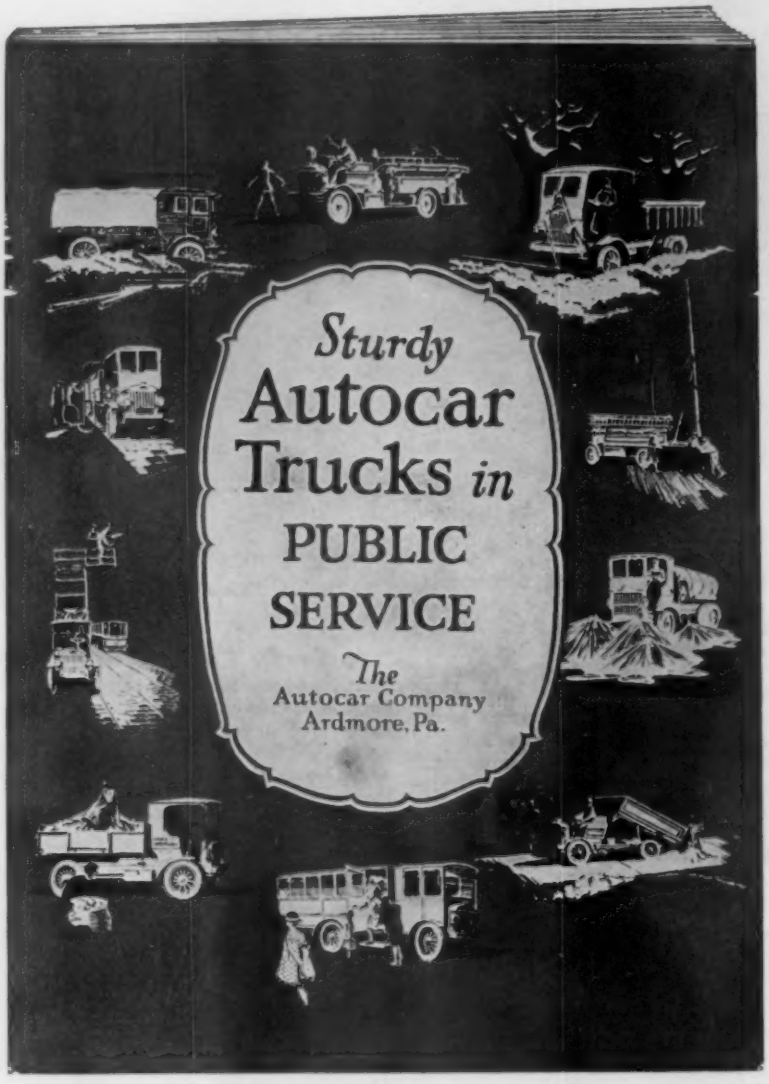
"No Traffic Law Violation Week"

SHREVEPORT, LA.—To create more respect for the traffic laws of Shreveport and to lay the foundation for a continuous drive for safety on the streets of this city, a "No Traffic Law Violation Week" was recently observed in Shreveport. The idea originated with the local Rotary Club, and a committee was appointed, with the Secretary of the Shreveport Chamber of Commerce as Chairman, to direct the campaign.

The help of all Shreveport's citizens was solicited to make the drive a success. Our newspapers carried messages daily, urging every one, children



SPANISH ARCHITECTURE WAS ADOPTED FOR THE NEW BUILDING OF THE CHAMBER OF COMMERCE, JOILET, ILL.



SEND for this new book FREE!

It gives information of interest and value to every municipal official or public service company. 24 pages. Illustrated.

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ESTABLISHED 1897
Ardmore, Pa.

BRANCHES IN 50 CITIES

Autocar
gas *and* electric trucks
EITHER OR BOTH - AS YOUR WORK REQUIRES

and adults, to observe all local traffic laws. Employers were asked to make personal appeals to their workers, in addition to posting printed notices in their places of business. All fraternal and civic organizations cooperated by bringing the message of the week to the attention of their members, and announcements were made in the churches and Sunday schools. At motion picture theaters the plea for observance of traffic laws was flashed before the audiences, and street cars carried safety slogans. Thus it was almost an impossibility for any resident or visitor not to read the message of the campaign at some time during the week.

The campaign was accounted a tremendous success, for although the backers of the movement were not granted the satisfaction of a report of 100 per cent rating, the record of only 13 convictions during the entire week, when compared with previous reports showing an average of 35 convictions daily, was considered remarkable. It is hoped that this one week's concentration on the reduction of traffic law violations will have a lasting effect on conditions in this city.

Further details as to the management of the campaign will gladly be sent to any one interested, by the writer, or by Jim Turner, Secretary of the Shreveport Rotary Club.

W. N. BLANTON,
Secretary-Manager, Chamber of Commerce.

A Well-regulated Farmers' Market

BURLINGTON, N. J.—A well-regulated, open-air farmers' market, conducted on a site leased for the purpose by the Burlington Common Council, has supplanted the old unsupervised market on the city's main street, as the result of a movement initiated by the local Chamber of Commerce.

This city, located in one of New Jersey's most productive agricultural counties, has long been the site of a farmer's market, but in recent years the popularity of the institution was steadily declining. Some of the principal reasons for this condition were: the increasing street traffic and the fact that the market spread over two particularly long street blocks, made marketing a time-losing process; farmers could not be sure of securing their chosen positions in the market from day to day; and, in the absence of regulations, farmers were racing each other to the market, within a few years changing the opening time of the market from mid-afternoon to early daylight. From the city's standpoint, the unregulated street marketing had become a nuisance in that it caused unnecessary traffic congestion and increased fire hazards.

THE FARMERS' MARKET IN BURLINGTON, N. J.

These facts were outlined by the Chamber of Commerce in its plea to the Common Council for the establishment of a properly supervised market place. After seeking the advice of the State Bureau of Markets and the County Board of Agriculture, as well as consulting with the farmers themselves, the Council passed an ordinance creating a farmers' market. Conforming with the terms of this ordinance, a plot of ground, on which spaces were marked off for the farmers, was rented, a marketing director was employed, and a set of regulations governing the conduct of the market was drawn up at a conference between the Council, representatives of the two agricultural agencies previously mentioned, and the farmers. The wisdom of having this joint conference has been attested by the fact that during the first season's operation of the new market, no criticisms or demands for changes have been received from the farmers.

The new market has so far been an outstanding success. The number of buyers has increased, and many farmers who previously sought other outlets for their products are now using the market. Stalls are leased to farmers by the day or month. On monthly leases, the farmer is assured of being able to occupy the same stall each day, and whenever possible those holding day leases are also placed in the same stalls previously occupied by them.

Through an arrangement made with the State Bureau of Markets, the market reports are broadcast to all eastern buying centers.

C. W. TILLINGHAST,
Secretary, Chamber of Commerce of Burlington.

Baker Park, Kewanee, Ill.

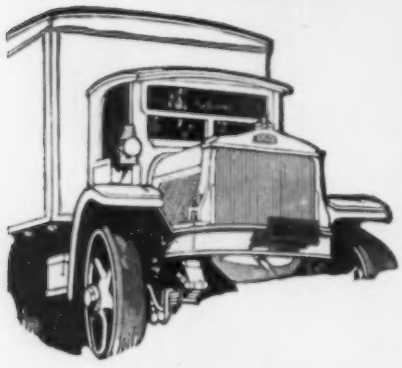
The photograph of this park, reproduced on page 191 of the August issue, should have been credited to Russell T. Neville, of Kewanee, Ill., the owner of the copyright.

THE CIVIC WORK OF THE COMMERCIAL ORGANIZATION SECRETARY

In the very beginning it is presupposed that a commercial organization secretary takes up this line of endeavor because he is willing to assume a responsibility through which may be created new environments and to faithfully represent for his organization community sentiment on all industrial, commercial, civic, and agricultural problems which will confront him from time to time.

—F. D. E. Babcock, Manager, Eastern Division, Chamber of Commerce of the United States, in an address before the Pennsylvania Commercial Secretaries' Association.

100,000 200,000 300,000 miles and more



There is a White Truck model to meet every transportation need. Truck chassis, $2,150 to $4,500; Model 50A Bus chassis, $4,950; f. o. b. Cleveland.

Owners' actual records of White Truck mileage

336 Whites have run **300,000** miles and more each

759 have run between **200,000** and **300,000** miles each

1204 have run between **150,000** and **200,000** miles each

3720 have run between **100,000** and **150,000** miles each

giving us the astounding total, by owners' actual records —

6019 Whites have run **100,000** miles and more each

No truck owner will operate a truck long enough to run 100,000 miles unless those miles are *money-earning miles.*

* * * * *

More than 6,000 Whites, whose owners actually check and report mileages, have run 100,000 miles and more each. We have no accurate record of the hundreds of additional Whites which have exceeded 100,000 miles. We do not count them.

More than 300 have passed the 300,000-mile mark and are still giving dependable service. Many have exceeded 500,000 miles.

These are not isolated performances of one truck, or even one hundred. Thousands and thousands of Whites have made 100,000 miles and more a performance standard.

White Trucks in all sections of the world—all models, in all lines of business—have carried their pay loads over their hundreds of thousands of miles in all weathers, climates and altitudes. Owners of single White Trucks are on this record. Other owners have whole fleets of 20 or 30 Whites that have run over 100,000 miles each.

We could offer no stronger proof that White Trucks give you more sustained, continuous, profit-making transportation than any other motor truck you can buy.

No other truck manufacturer has ever published such a volume of evidence of dependability, economy and long life. No other truck manufacturer can.

* * * * *

The names of all of the owners of the 6,019 White Trucks which have made these great mileage records are listed in a 100,000-mile booklet, published annually. You will find owners in your own section of the country, in your own line of business. Write for it. We will gladly send it to you—free.

THE WHITE COMPANY
CLEVELAND

WHITE TRUCKS

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

Finding and Developing Leaders in the Chamber of Commerce

TWELVE suggestions as to the development of leaders in local chamber of commerce work were offered by Raymond B. Gibbs, General Secretary of the Scranton Chamber of Commerce, at the 1925 Convention of the Pennsylvania Commercial Secretaries' Association, held at Waynesboro. These were:

1. A new secretary coming to a community often finds new leaders among the men who have not been doing any work, because he takes everybody for face value and has faith in them, and often old leaders and the community are surprised to find that some of those who it was supposed would not do anything, are willing to take hold and do their share of community work. I think of a number of cases where I was told you could not use certain men, and these men were used and developed into good leaders.

2. New leaders are often found by putting a few new and untried men on each committee. By doing this, we discover whether or not these fellows are willing to do their part. Of course, the few new men who are put on should be those who are likely to be interested in that particular subject.

3. A special effort should be made to put into committee service some of the younger men in the organization; but new leaders are frequently found by putting in some of the older men who have not been active.

4. A leader can sometimes be developed out of the genius, the enthusiast, and the crank.

5. The methods of developing Program of Work used by many organizations locate those who are willing to serve on some particular project. Five hundred and sixty-two members recently attended our Program of Work conferences, and wrote on cards the things they believe the Chamber of Commerce should do. Over 1,500 are suggesting the things of first importance for the Chamber of Commerce to take up on our referendum sent out.

6. The Junior Chamber of Commerce, where it is practicable to establish such an organization, is one source for discovering new leaders.

7. Personally, for nine years I have had experience with the Live Wire Group in the Chamber of Commerce, which is really a committee meeting of about 50 every week, like a luncheon club, and handles certain phases of Chamber of Commerce work. Anyone who comes into the organization and wants to get actively engaged in work is welcome in this group.

8. The development of new projects always opens the field for interesting more members and discovering new leaders.

9. If a member comes and says, "I'm through; I have done my share," it is time for us to check up. It may be the job we are asking this man to do is not big enough to continue to challenge his interest. A man who has been doing community work a number of years may sometimes think he wants to drop out, and if he does, he is going to be disappointed, and you'd better not take him too seriously. Don't argue with him, but study his case and find out the project which will be big enough and interesting enough to him to keep his active support.

10. Watch the luncheon or classification clubs, fraternities, churches, etc.; make a list of their leaders and see where they will fit into your organization.

11. You are familiar with the Committee on Committees. This is very important in the locating of new leaders. Your Committee on Committees, of course, should represent all sections of the city, and should look for new material all the time and assist the President and Secretary in committee appointments.

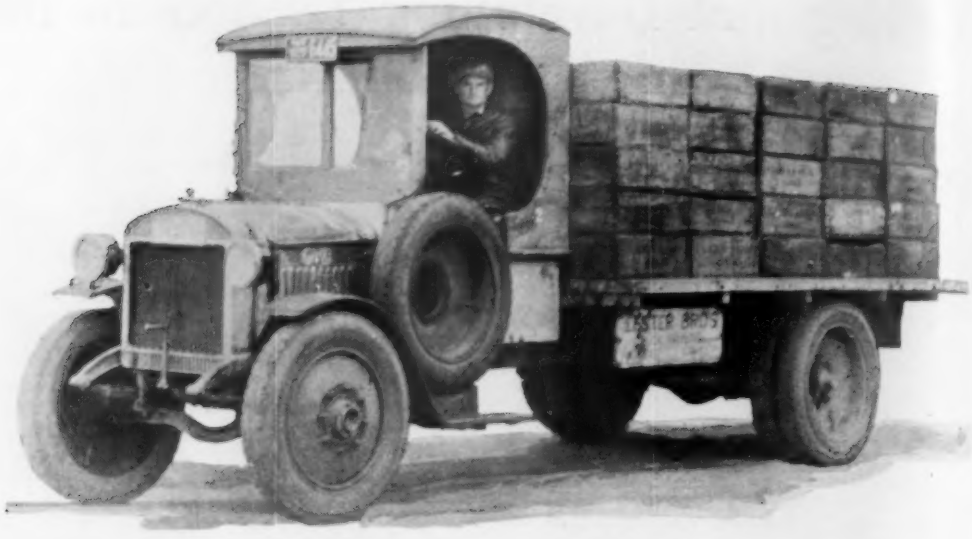
12. Finally, new leaders, new support, and new interest will be created by carrying on vigorously a well-developed program.

Value of Visiting Teacher's Work Recognized

TEN cities in which three-year demonstrations of visiting teacher work have recently been completed under the auspices of the Commonwealth Fund Program for the Prevention of Delinquency have determined to continue the use of visiting teachers as a regular feature of their public school systems. Howard W. Nudd, Director of the Public Education Association of New York City, is Chairman of the National Committee on Visiting Teachers which has administered these demonstrations. He gives the list of cities that plan to continue the services of visiting teachers as follows: Burlington, Vt.; Lincoln, Nebr.; Richmond, Va.; Red Bank, N. J.; Kalamazoo, Mich.; Sioux City, Iowa; Bluefield, W. Va.; Sioux Falls, S. Dak.; Warren, Ohio, and Hutchinson, Kans.

Meanwhile, demonstrations are being continued by the National Committee on Visiting Teachers in the following communities: Berkeley, Calif.; Birmingham, Ala.; Boone County, Mo.; Butte, Mont.; Charlotte, N. C.; Chisholm, Minn.; Coatesville, Pa.; Columbus, Ga.; Detroit, Mich.; Durham, N. C.; Eugene, Ore.; Huron County, Ohio; Omaha, Nebr.; Pocatello, Idaho; Racine, Wis.; Rochester, Pa.; Rock Springs, Wyo.; San Diego, Calif.; Tucson, Ariz., and Tulsa, Okla.

Under the arrangements made for these demonstrations the visiting teachers were appointed by the National Committee on Visiting Teachers subject to the approval of the local authorities. In each case the National Committee pays two-thirds of the salary for a three-year period and provides funds for certain additional expenses, while the remainder of the salary is paid by the local school board.



Street repairs or new construction?
Budd-Michelin decides

YOU can stop those endless paving repairs from eating up funds a city should spend in new construction—put those road-wrecking, hard-tired trucks on pneumatics.

Budd-Michelin Dual Wheels and pneumatics are the combination that saves 87% of the punishment hard tires give the paving. 30,000 heavy buses have proved it.

Street repairs or new construction? That is the question Budd-Michelin decides.

We welcome inquiries from city officials who want facts.

BUDD
WHEEL COMPANY
Philadelphia

Effective Action Against Salacious Plays and Magazines

By John S. Sumner
Secretary, The New York Society for the Suppression of Vice

A NEWSPAPER item to the effect that the London censor barred the play "The Harem" which was to be produced there on August 17, 1925, suggests the need of some effective means of supervision of stage productions in our own cities. He said of this play, according to the *New York Times*, "the plot is objectionable, the dialogue nasty, and the whole atmosphere salacious." No doubt public officials of New York were of the same opinion, but they lack the machinery with which to remove from the stage a play having the above-mentioned characteristics; that is, they are unable to move quickly and effectively in a manner to overcome the evil, without giving the play the advertising which the producer craves. This is due to limitations placed upon the powers of the Commissioner of Licenses. He licenses theaters, but he cannot summarily revoke licenses because of indecency. He can institute a court proceeding for the purpose, but its duration is lengthy, and meanwhile the play proceeds and the newspapers advertise the fact that it is under attack as an indecent show.

Public Opinion and Police Action

In this article the Secretary of the New York Society for the Suppression of Vice discusses a problem which is very difficult of solution in the largest cities, but which is more readily handled in the smaller communities by public opinion and police action. As Mr. Sumner points out, it behooves the authorities of such cities to ignore the fact of "a long New York run" as having any bearing upon the moral correctness of a play. And of even greater importance than refusal to permit the showing of indecent plays is the suppression of salacious magazines.

The New York police can take action, but here again there are long delays due to court procedure and legal technicalities. The "God of Vengeance" ran for several months after its entire caste were indicted by a Grand Jury. "The Harem," which was condemned by the London censor, ran for more than six months under the auspices of David Belasco without official interference.

Fortunately, the same difficulties do not exist in all American cities, and it behooves the authorities of such cities to ignore the fact of "a long New York run," as having any bearing whatever upon the moral correctness of a play. Particularly in cities of a more homogeneous population than New York, should it be easy to properly regulate stage performances. In that situation there is a real "public sentiment" which can be aroused and which will strongly back up official action in the interests of public decency. Public officials in the exercise of their functions are prone to move no faster than they think public opinion will approve. Consequently, where there is no concerted and preponderant public opinion, official action is likely to be timorous and ineffective.

In a city where public shows or show-houses are licensed by the police, there should be no difficulty in suppressing an indecent show through alert police supervision and action. In Boston, a code of what may not be shown on the public stage has been issued from the Mayor's office and has proved quite effective. An aggressive prosecuting official by a word of warning can frequently bring about the withdrawal or substantial cleaning-up of an objectionable public show. Both results have, on occasion, been secured by the present District Attorney of New York, but such action must be consistent and continuous to be really effective.

To the discredit of the profession, there are producers of stage performances whose ambition seems to be to put on a dirtier show than any of their competitors. Unmoral themselves, regardless of public welfare, they labor under the delusion that indecent plays are money-makers. It is true that plays of this type have brought in quick returns, especially when advertised by an ineffective prosecution, but the fact remains that the biggest money-makers have been clean plays with an appeal to some general human emotion.

FOR YOUR INFORMATION

A Study of Comparative Cost Figures on Fordson Power vs. Horse Power

The work of building a dam for the water supply of the city of Washington, Pa., necessitated cutting earth from an adjacent hill and hauling to the site of the proposed dam.

After 18 days of operations the following table of costs was compiled and submitted by D. C. Morrow, Engineer and Supt. of the Citizens Water Co. Note especially that the Fordson cost figures include the purchase price of full equipment. Subsequent jobs will show the cost per yard considerably lower.

Hauling

4 Fordson Tractors		10 Horse Teams	
First cost—4 Fordsons with dump wagons	*$3132.00*		
Depreciation, maintenance, repair and wages	*960.42*	*Hire of 10 teams with drivers*	*$1863.00*
Yards per hour per tractor	*7.95*	*Yards per hour per team*	*4.44*
Total cost per yard	*.186*	*Total Cost per yard*	*.258*

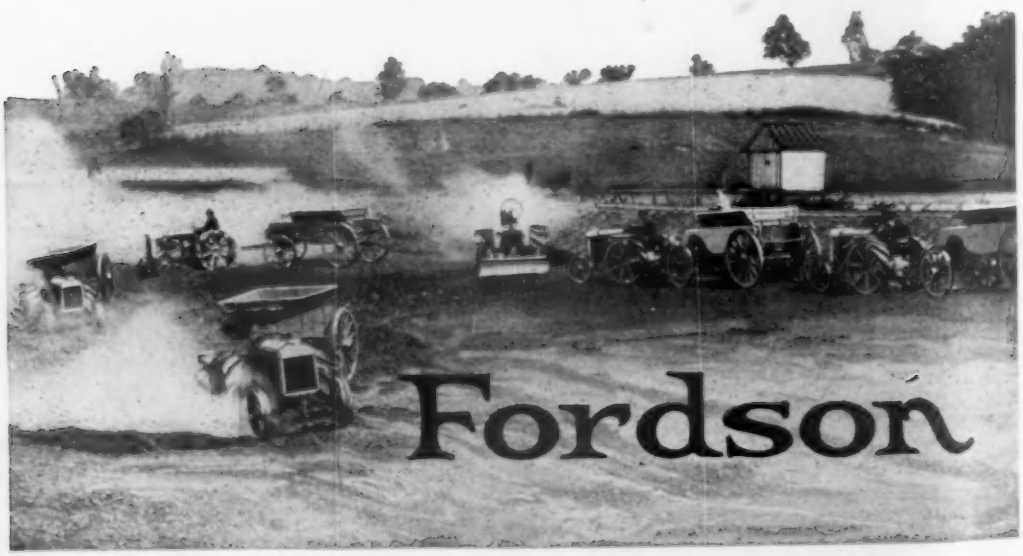
Back-filling

First Cost 1 Fordson with back filler blade	*$713.00*		
Depreciation, maintenance, repair, and wages	*234.51*	*Leveling by hand—5 men Total Cost*	*$372.60*
Total cost per yard	*.045*	*Total Cost per yard*	*.051*

Your nearest Authorized Ford Dealer is thoroughly familiar with Fordson power as an engineering asset, and will gladly assist you in estimating costs and suggesting operations for such work as you may have in contemplation.

Fordson Tractor—$495.00 f. o. b. Detroit

Ford Motor Company
Detroit, Mich.



If a play, in spite of filth, profanity, blasphemy, and other demoralizing features, has, because of local difficulties in law enforcement secured the prestige of a long Broadway run, it is all the more incumbent upon the prosecutors and police of other localities to resort to suppressive action. In that way gains accumulated in New York would be dissipated on the road, and some of these renegade producers would either be driven out of business or "reformed" through the medium of reduced bank accounts.

Periodical Publications of Degrading Type

Of course, the indecent play is not by any means so wide-spread in its effect as the salacious magazine publication. During recent years the country has been literally flooded with periodical publications of a degrading type. It is a deplorable fact that these are read very largely by schoolgirls and schoolboys and others easily impressed, and their young and plastic minds are filled with and influenced by stories and anecdotes and pictures of a most demoralizing type.

These magazines are of four classes:

The frankly sex magazines
The smutty pocket magazines
The "true experiences" magazines
The alleged art magazines

The first contain fiction stories based largely on illicit sexual relations, the alleged wildness of the present younger generation, and the unimportance of fidelity in the marriage relation. The impression of life gained from such publications is necessarily misleading and demoralizing, particularly where the reader is a young adolescent without a substantial moral foundation. A New York employee of one of these magazines was recently convicted in Massachusetts and sentenced to imprisonment for six months.

The pocket magazine exploits the questionable jokes and smutty anecdotes of the barroom and the gutter. Its tendency is to undermine the ordinary training which most children receive in common decency and propriety in speech and action. It is a stepping-stone to loose thought and companionship and to vicious and unsocial conduct.

The third type of magazine purports to publish the true experiences of persons, and the excuse given is that these experiences may serve as a warning to others. Needless to say, most of these stories have to do with unmarried mothers, illicit sex relations, and exploits in vice and crime. Ideas and information are implanted in minds unprepared to properly differentiate between what is right and what is wrong. Repulsive details of various vices and the activities of the underworld are spread over page after page, and in the last three lines an alleged moral may be set forth. The impression gained is that the publisher is interested very little in the maintenance of public morals, but that rather he is greatly interested in the financial returns from his degrading output. The postal authorities recently barred from the mails two issues of such a magazine and confiscated copies to the extent of thousands of dollars in value.

The alleged art magazine is a comparatively new product. Probably its publication was directly encouraged by a decision of a New York criminal court holding that a display of certain offensive theatrical advertising was not a violation of law. The chief object of these magazines seems to be the commercial exploitation of pictures of nude or lightly draped females. Many complaints have been received from school teachers and others as to the effect of these publications upon the young and impressionable. Publishers and distributors of some of these periodicals are now awaiting trial in New York courts for alleged violation of the state law against indecent publications.

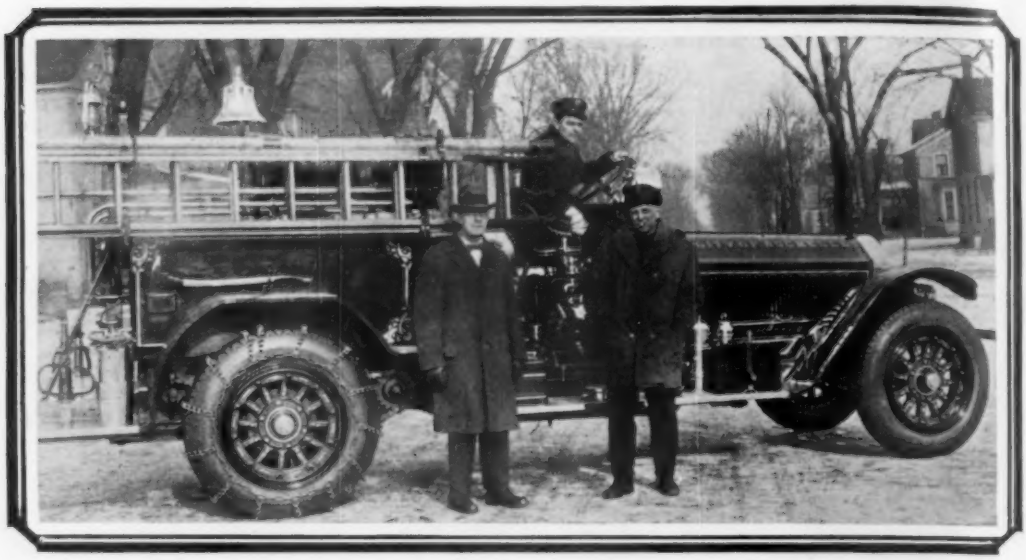
Handling the Magazine Situation

This magazine situation can be readily handled in smaller communities. As a rule, a warning from the chief of police or the prosecuting attorney to the newsdealer or wholesale distributor is effective.

But, as previously intimated, public officials want public support, and so it is particularly the duty of organizations and individuals interested in the public welfare to keep an eye on these publications and, when reason therefor exists, to make complaint to their local authorities and then stand solidly behind their officials in any suppressive action taken.

It is no credit to New York City that many of these offensive publications originate there, but the fact is that they do and that sometimes attempted legal control is ineffective. The good people of New York will not be offended at any embargo placed on these wares by other communities. Rather they will rejoice at such activities, for the more these publications are attacked and the more noise that is made, the sooner will some of our judiciary be aroused to the fact that the safeguarding of public morals is much more important than upholding some alleged "freedom of expression" or "freedom of the press," which in this instance is not freedom but destructive license.

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER . . Firestone



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Fire Chief, City of Rochelle, Illinois

"We have just secured a new 600 gallon Fire Truck, equipped with your tires. We are so pleased that we take pleasure in recommending Firestone Tires to the Fire Chiefs of this country. Our drivers comment on the easy steering qualities and the margin of safety they feel when using Firestone Heavy Duty Truck Tires.

"I feel fully justified in recommending Firestone for any kind of Fire Truck equipment."

"Easy steering and safety"—two of the most important tire factors for high speeds through crowded traffic and over all kinds of roads.

Gum-Dipping, the Firestone extra process, insures that safety. It insulates every fiber of every cord with rubber, minimizing destructive friction and giving the cords the extra strength to withstand the strains and stresses of high speeds and hard usage.

Engineered for fire apparatus, Firestone Heavy Duty Truck Tires grip the road with their powerful tread under all kinds of weather conditions, and give greater control of heavy apparatus and instant, safe response to the driver's wheel.

Equip your apparatus with these tires and get the benefit of their endurance, safety, longer mileage and greater economy.

MOST MILES PER DOLLAR

The Mark of Quality

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HEAVY DUTY PNEUMATICS FOR FIRE APPARATUS

How the City Manager Plan Is Working---III

Answers from Chamber of Commerce Officials and Other Prominent Business Men to an Inquiry from the Editor of THE AMERICAN CITY, Recently Sent to Cities of 10,000 to 100,000 Population Where the City Manager Plan of Government Has Been in Operation for Three Years or More

(Continued from the September and October issues)

Sapulpa, Okla.

The writer was the first mayor of the city under the managerial form. The charter authorizing this form of government was voted in February, 1922. Previous to that time for a long number of years, our city had been operated on what was termed the commission form of government. Three commissions and a mayor had been elected each two years and the rankest form of politics had been ruling the elections. As each administration wished to perpetuate itself, it, of course, practiced politics with that one thing in view, more than anything else, to be able to achieve a return at the next election following.

The affairs of the city had been going from bad to worse. We were practically bankrupt, we had numerous outstanding bond issues, maturing each year for a number of years; and for several years prior to 1922, the city had been going deeper and deeper into debt each year. The cause being traced to inefficiency in the government, the people were thoroughly aroused, and when the managerial form was suggested, it readily carried.

During the first two years of this form of government, the sinking fund, which had been entirely depleted, was substantially rebuilt. Two bond issues were paid off. The accounts in every department were restored to balances instead of deficits, surplus and unnecessary labor and office help was dispensed with and the expenses of the city in many different directions reduced. Each year has shown an increase in the balances on hand in funds. All warrants issued by the city are cashed at par. Our credit is good, and we have been spending a great deal of money on improvements. Our streets have been kept in good repair, and the efficiency of government of the city has been brought to a high order, with politics entirely dispensed with. Of course, this has not been done altogether without mistakes being made, but the experiment has been a great success.

While the managerial form of government has its opponents, they are found in the ranks of the politicians, who are anxious to regain control of the city for the purpose of exploiting its funds and credit just as formerly was done.

H. A. McCAULEY,
President, The Sapulpa State Bank.

Sault Ste. Marie, Mich.

The indisputable and outstanding feature of the commission-manager form of government, as it is working out in Sault Ste. Marie., Mich., is that it has put the affairs of the city on a business basis. That was the chief thing claimed for it in advance by the forward-looking citizens who advocated its adoption, and it has worked out in such a manner as to prove them right in their contentions.

An important feature of the commission-manager form, as in operation here, is that it is administered by men who are elected at large, and not from particular wards. This means that each is chosen by the vote of a majority of citizens of the entire city, and not by a few voters in a particular section. Thus no commissioner has any special axe to grind for the people of his ward.

The Manager's office in the City Hall is open to every one at all times. He is on the job, with every fact connected with the city's affairs at his finger-tips, ready and eager to give information on all questions.

NORMAN H. HILL,
Managing Editor, *The Evening News.*

Sherman, Texas

Sherman's present charter was adopted in 1915. It was a very radical change from the old aldermanic form of government to the modern council-commission manager plan. The city manager is appointed by the commission, subject to the approval of the council. The department heads are appointed by the manager and are subject to him.

The benefits of the new form of our city government over the old form are many. The main feature is that it puts efficiency into governmental affairs. Simplicity in public management is certainly a great forward step. Many departments have been merged and economy and efficiency have been the result. A competent and honest city manager can get things done without the delay of former times and he can save the taxpayers much money. If a matter of great importance confronts him, he can call the mayor and two commissioners for a meeting and get their judgment and act without delay.

As proof that the city manager form of government for Sherman has been and is a success, I do not believe there is a single successful business man here that would be in favor of a change in our form of government. Our city has made much progress and is advancing steadily along commercial, educational, and civic lines.

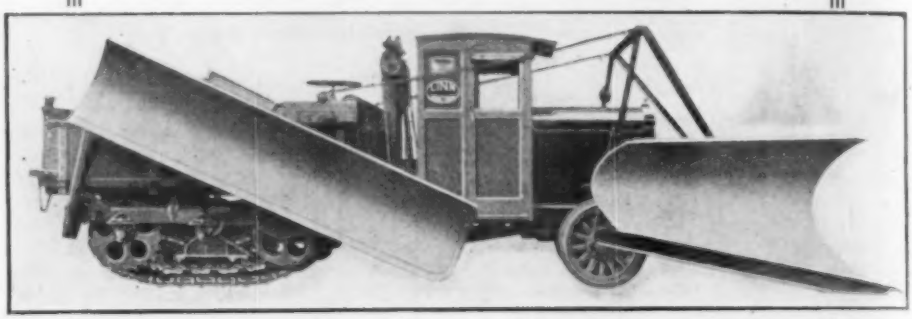
LEE SIMMONS,
Secretary, Sherman Chamber of Commerce.

Tampa, Fla.

The commission form of government was inaugurated in Tampa in 1920. It provides for a mayor-commissioner, four commissioners, and a city manager, with a provision for additional

Raise Your Snow Plow When Not in Use

An important feature of Linn Snow Fighting Equipment is the ease with which plow and wings can be raised. This permits driving the equipment over the roads and eliminates the difficulties of dragging the plow and wings over the bare ground.



Side view of Linn Snow Fighting Equipment with plow and wings raised.

Other advantages of the Linn Tractor and Snow Plow:

It is a **heavy-duty, heavy-hauling** machine.

The **body can be loaded,** thereby giving the necessary traction for pushing heavy snow.

The conventional front steerage enables the operator to push the plow **in a straight line.**

The machine has an **18-foot spread.**

Write for our illustrated catalog, showing what the LINN TRACTOR AND SNOW PLOW can do.

LINN MANUFACTURING COMPANY
MORRIS, N. Y.

commissioners as the city increases in area and population. The work of the different departments of the city government is conducted through committees and departments, such as the water-works committee, police department, fire department, sanitary department, etc.

The inauguration of the commission form of government was almost coincident with the beginning of the present development era in Florida; therefore it is difficult to dissociate the results of that general development from those following the institution here of the new form of city government. However, it may be said that under the commission form, or since its inauguration here, the city has purchased the plant and system of the Tampa water-works and is completing a new filtration, clarification and water-softening plant capable of delivering a minimum of about 35,000,000 gallons a day; has annexed considerable suburban territory; has acquired much valuable park property; has almost doubled the public school facilities; and has recently inaugurated a program of public improvements to cost more than $3,000,000 and to include the widening of all the important streets and avenues, the construction of two new bridges spanning the Hillsborough River, and the construction of a municipal hospital, a municipal auditorium, and a recreation and fishing pier and pavilions at Ballast Point Park.

It also may be said that the period since the inauguration of commission government here has been the most active period in Tampa's history. The city's population has increased since 1920 from 51,608 to more than 94,000; real estate values have increased from 100 to 1,000 per cent, according to location and type of property; tax valuations have increased more than 150 per cent, building permits have increased more than 100 per cent, bank resources and deposits have increased more than 500 per cent—in short, all of the indexes of municipal progress and prosperity have risen in wonderful fashion in the last five years. So that even though it may be argued that these things have been concomitants of the growth and development of Florida as a whole, it at least must be admitted that Tampa's adoption of the commission form of government has not hampered city growth and development along all lines.

F. D. JACKSON,
President, Tampa Board of Trade.

Temple, Texas

The revival of Temple has been accomplished in one of the smoothest fashions known to any little city. The taxpayers have not been made to howl from the increase of taxes. On the contrary, the tax rate was lowered from $2.00 to $1.90, and from that to $1.70, as it stands at present. The valuation in 1921, $9,280,789, netted the city $185,615. In 1924 the tax rate of $1.70 on a valuation of $11,122,920 netted the city $190,353. This came through an improved system of renditions which proved to be satisfactory and more just and equitable to the property owners.

When the city manager form of government was adopted, the city limits were enlarged to bring in new areas that were escaping taxation, and this accounts for a good part of the increased valuation. The population was also increased from 11,000 to 16,000.

The city employees are all being well paid, their salaries being much in advance of those paid prior to the adoption of the city manager form of government. The water-mains have been extended and fire-hydrants placed in new territory, which gives fire protection in every portion of the city; as a result, the fire rate has decreased and new homes are being built in every section of the city. A paving program of $325,000, about one-half of which has been completed, will add over 5 miles of paved streets to our city. The school system has been greatly improved, and at present the city is spending $210,000 on school improvements.

We are well pleased with the city manager idea and the progress being made by our city and we do not hesitate to recommend its adoption to any city that is contemplating making a change.

W. A. SPENCER,
Secretary, Temple Chamber of Commerce.

Wichita, Kans.

The commission and city manager form of government has been given a thorough test over a period of years and I am confident that the citizens of Wichita would not, under any circumstances, be willing to revert to any former type of city government.

It has been proved in Wichita, a progressive city of 100,000 population, that municipal improvements can be made under the most modern plans for city growth on such an economical basis that our taxes for city purposes are lower than in any other incorporated city or village in the state.

The fact that the City Manager is responsible for all employees takes all of our departments out of politics and results in greater efficiency in each branch of municipal activity. The removal of city affairs from politics has enabled us to draft the services of responsible business men to act as city commissioners—men of such type as could not have been persuaded under any circumstances to stand for office under the old aldermanic form of government.

We can say with perfect truth that more honesty in government, efficiency, and economy of effort and money can be best obtained through the commission and city manager form of government than through any other system yet devised.

GEO. H. HAMILTON,
Vice-President, The Fourth National Bank.

THE CITY'S BUSINESS

Municipal government is a business concern with property, plant, personnel, stockholders, and a problem. It is a business which requires broad judgment, a clear vision, an intimate knowledge of the needs of the entire city, and a study or measure of the way to effect the wisest economy. This business can be wise and economical, or foolish and wasteful. It may continue to operate as a political affair, as in the past, or may be a real cooperative and industrial concern, achieving the greatest results at the least cost to its stockholders, producers and consumers, who, as the same persons, benefit by and pay for the product. —*Illinois Municipal Review.*

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The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

The City's Relation to Hospitals

ALTHOUGH some courts have made the right of a city to establish and operate a hospital dependent upon express statutory or charter authority, others have treated the power as arising under such general functions as preserving the public health and promoting the general welfare.

In the case of Cumnock vs. City of Little Rock, 243 Southwestern Reporter, 608, the Arkansas Supreme Court determined that defendant city had a right to erect a hospital under power "to provide for the safety, preserve the health, promote the prosperity, and improve the morals, order, comfort, and convenience of such corporations and the inhabitants thereof." The Court said:

"We are . . . of the opinion that the power to erect a city hospital is a necessary incident of municipal life. In a growing city, a city hospital may be necessary for the preservation of the public health and the care of sick paupers. We can see no difference in principle between the right of a city to erect and maintain a hospital and to erect and use city halls, jails, and the like. Most cities of any considerable magnitude have city hospitals subject to the regulation of its own local authorities. It is true there is express statutory authority to erect them in many states, but we are also of the opinion that such authority is essential to carry out the object and purposes of organizing municipal corporations."

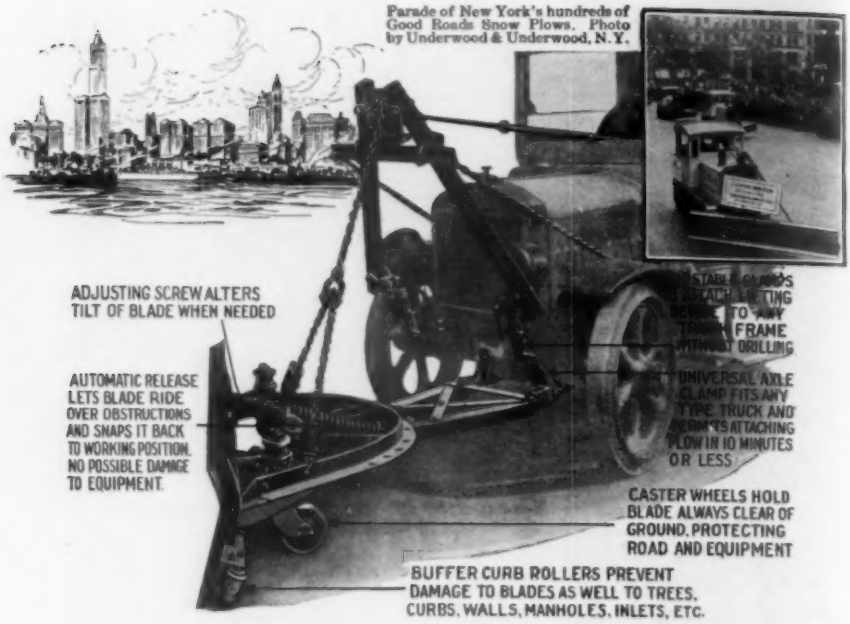
But even when a city was expressly authorized to establish a hospital, in connection with power to safeguard the public health, it was decided by the Illinois Supreme Court that it could not engage in the business of conducting a hospital for revenue. (Tollefson vs. City of Ottawa, 81 Northeastern Reporter, 990.) This decision was reached under a statute construed as excluding municipal authority to operate a hospital primarily for profit, but is not necessarily to be taken as meaning that a hospital may not be placed upon a self-supporting basis or that the city may not accept payment from patients who are able to pay for what they receive, nor even that derivation of some profit as an incident to making the establishment self-supporting, in good faith effort to merely make the institution self-sustaining, would be unlawful. Here there is room for an analogy to the decisions, in states where cities may not levy occupational taxes for revenue, that imposition of licensing fees to cover the cost of police regulation of a business subject to such regulation is not improper because, incidentally, there may be a margin of revenue above such cost. Holding that defendant was not liable for negligent treatment of plaintiff as a patient in its city hospital, the Court observed, after quoting the statutes conferring powers upon cities:

"Under these paragraphs a city may conduct a hospital, either as a charity or as a means for the promotion of the general health of all its residents or the suppression of disease among all the inhabitants of the municipality, and for no other purpose. If the purpose be charitable, then the city is not liable for the negligent acts of its employees in the institution. . . . If, on the other hand, the purpose is to provide for the general health and welfare, and to provide for suppressing and preventing the spread of contagious diseases, the statute authorizing the city to acquire and maintain the hospital must be regarded as an exercise of the police power, which comprehends the making and enforcement of all such laws, ordinances, and regulations as pertain to the comfort, safety, health, convenience, good order, and welfare of the public. . . . A city is not liable for the negligent acts of its agents or servants engaged in executing, enforcing, or giving effect to its police ordinances and regulations. . . .

"The city did not possess the power, in its private or proprietary capacity, to engage in the business of conducting a hospital for revenue. If the municipal authorities have unlawfully entered upon a course of that character, the city cannot be made liable for negligence on their part or on the part of those employed by them in carrying out their purpose."

The Georgia Supreme Court has ruled that where a statute empowered a city to erect and maintain a hospital for the treatment of smallpox, there was power to agree with the county for the care of the city's smallpox patients in the county hospital, sharing the expense with the county of maintaining the hospital according to the number of patients sent by the city. (Macon vs. Bibb County, 75 Southeastern Reporter, 435.)

In the case of Von Schmidt vs. Widber, 38 Pacific Reporter, 682, however, it was held that statutory power conferred upon the city and county of San Francisco "to make all regula-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New York City uses 700

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"CHAMPION"

tions which may be necessary or expedient for the preservation of the public health and the prevention of public health, could not be relied upon as authorizing the erection of a smallpox hospital. The California Supreme Court said:

"The 'regulations' which the board of supervisors is thus authorized to make are rules of conduct to be observed by the citizens, and cannot, by any construction of the language, be held to include the purchase of real estate; nor can the power to make such purchase be implied from the authority to make the regulations."

The power of cities to adopt reasonable regulations governing the operation of hospitals by others than the cities has been upheld in several decisions of courts of last resort.

In the case of Blackman Health Resort vs. City of Atlanta, 107 Southeastern Reporter, 525, the Georgia Supreme Court decided defendant city acted within its charter power in adopting an ordinance restricting the location of hospitals, etc. The opinion recognizes that a hospital is not an inherent nuisance, but that it may become a nuisance if situated near residential property.

In the case of Shepard vs. Seattle, 109 Pacific Reporter, 1067, the Washington Supreme Court sustained the validity of an ordinance forbidding the establishment of private institutions for the treatment of inebriates or insane without the written consent of the owners of the private property situated within two hundred feet of the location. The Court said:

"This, in our opinion, is a valid and reasonable police regulation. . . . It is a matter of common knowledge that the presence of such an institution in a residential portion of a city would practically destroy the value of all property within its immediate vicinity for residence purposes. If so, it was proper and competent for the municipal authorities to require the assent of the injured parties to its location and maintenance."

In Cook vs. City of Fall River, 131 Northeastern Reporter, 346, the Massachusetts Supreme Judicial Court refused to enjoin establishment of a hospital for tubercular patients, although that decision was influenced somewhat by a statutory requirement that the city maintain such an institution within its city limits. The Court said:

"Hospitals for contagious diseases must be established and maintained for the protection of the general public; and it is not to be assumed in advance that such a hospital, well equipped and managed under the supervision of public health boards, will be a nuisance. . . .

"Without going so far as to say that purely mental discomfort cannot constitute a nuisance, certainly the law will not enjoin the erection of a municipal hospital on facts such as are disclosed by this record, in order to protect the plaintiffs from dangers which are found to be unreal. . . . Depreciation of the market value of the petitioners' land, assuming it to be proved, would not be decisive in their favor."

Items of Municipal Law

Relative Rights of Pedestrians and Vehicles in Streets

"As to the relative rights of vehicles and pedestrians," declared the United States Circuit Court of Appeals, Third Circuit, in the recent case of Quaker City Cab Company vs. Fixter, 4 Federal Reporter (2d Series), 327, "vehicles have the right of way on the portion of the street set aside for them, but at crossings, all drivers, particularly of motor vehicles, must be highly vigilant, and maintain such control of their vehicles that they can stop their cars on the shortest possible notice. . . . If the deceased did not start to cross Broad Street against the traffic signals, and had without negligence committed himself to the crossing, he had the superior right of way against a vehicle thereafter approaching. . . . If, on the other hand, he *started* to cross against the traffic signs, he was guilty of negligence."

Legislature's Power to Annex Territory to City

The power given the Florida Legislature by the local constitution "to establish and to abolish municipalities" includes the power to annex territory to an existing municipality, holds the Florida Supreme Court in the recent case of MacGuyer vs. City of Tampa, 103 Southern Reporter, 418. The Court adds:

"The statute confers governmental jurisdiction, not proprietary rights, upon the city in the annexed territory; and the validity of the enactment is not dependent upon the consent of the inhabitants of the annexed territory."

Ordinance Restricting Keeping Cows in City Upheld

An ordinance of the city of Charlotte, N. C., prohibiting the keeping of cows within a certain restricted area was sustained by the North Carolina Supreme Court as being valid, in the case of State vs. Stowe, 128 Southeastern Reporter, 481. The Court said:

"In the exercise of an unquestioned police power much must necessarily be left to the discretion of the municipal authorities, and their acts will not be judicially interfered with unless they are manifestly unreasonable and oppressive. . . .

"The fact that the ordinance in question prohibits the keeping of cows within certain defined limits of the city, and permits them to be kept, under specified restrictions, in the remainder of the corporate territory, is not per se an unreasonable regulation. It is presumed to be otherwise."

Street Railroad's Liability for Paving Cost

The legislative power of the state may require a street railway to pave or meet the cost of paving its track laid on the grade of a public street; may authorize a municipality to assess the cost thereof to the street railway company, and declare a lien on its property as security for its payment. (Alabama Supreme Court, Alabama Traction Company vs. Selma Trust & Savings Bank, 104 Southern Reporter, 517.)

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Zoning Notes

Prepared by Frank B. Williams
Author of "The Law of City Planning and Zoning"
From data collected by the Zoning Committee of New York (233 Broadway)
Mr. Williams may be addressed in care of THE AMERICAN CITY, 443 Fourth Avenue, New York

Recent Zoning Ordinances and Enabling Acts

NEW BRITAIN, CONN.—Ordinance, September 16, 1925

WEST PALM BEACH, FLA.—Enabling Act, June 2, 1925

EVANSVILLE, IND.—Ordinance, August 22, 1925

DULUTH, MINN.—Ordinance, October 6, 1925

HADDON HEIGHTS, N. J.—Ordinance, August 7, 1923

OAKWOOD, OHIO.—Ordinance, September 8, 1925

Recent Zoning Decisions

CALIFORNIA.—*Blumenthal & Co., Inc., v. Cryer,* 236 *Pacific Reporter,* 216. Zoning ordinances establishing residential districts in which the erection of tenement houses is prohibited are within the police power delegated to the municipality by the California constitution, and authorized by the State Zoning Act. The fact that property is depreciated thereby is not of controlling significance. The fact that the ordinance permits the continuance of existing uses does not make it void. The provision authorizing the council to make exceptions is severable from the rest of the ordinance, which would be unimpaired even if such provision were invalid; so that the question of its validity need not be determined in the absence of an exception made affecting the merits of this case. Miller v. Board of Public Works, and Zahn v. Board of Public Works, summarized in "Zoning Notes" for May, 1925, followed.

CALIFORNIA.—*Parker v. Colburn,* 236 *Pacific Reporter* 921. A public garage may be regulated or even prohibited, under the police power, as a nuisance, and the fact that discretionary power is vested in the council to grant or refuse a permit for its erection, does not invalidate the ordinance.

DELAWARE.—*Mayor and Council of Wilmington v. Turk,* 129 Atlantic Reporter 512. A private hospital which to all outward appearances is a residence is not a nuisance, and its exclusion from a residential district created by a zoning ordinance cannot be upheld as an exercise of the police power. Esthetic considerations alone do not warrant such exclusion.

This case is reviewed at length in an editorial in the *New York Law Journal* of September 4, 1925—"The 'Police Power'—Aesthetic Purposes."

IOWA.—*Rehmann v. City of Des Moines,* 204 *Northwestern Reporter* 267. Where the proper officer issued a building permit on full showing by the applicant of the nature and character of the building and the use to be made of it, the permit is not revocable on the ground that the applicant did not fulfil his promise to obtain the consent, not required by law or ordinance, of property owners of the district. Such failure is not fraud.

LOUISIANA.—*State ex rel. Dickason v. Harris* 105 *Southern Reporter* 33. The zoning ordinance of Shreveport prohibited the erection of business buildings in "any recognized residential district," except on presentation of a petition signed by not less than fifty-five per cent of the property owners residing in the street where the building is sought to be erected. *Held* that the applicant for a permit for a business structure could not claim that the ordinance was invalidated by the provision for consents, since it was in her favor; but that the ordinance was void because the definition of a residential district in it was vague.

NEW JERSEY.—*Ingersoll v. South Orange, Court of Errors and Appeals,* September 29, 1925. The decision in this case in the Supreme Court was given in the "Zoning Notes" for July. This decision has now been affirmed by the highest court of the state.

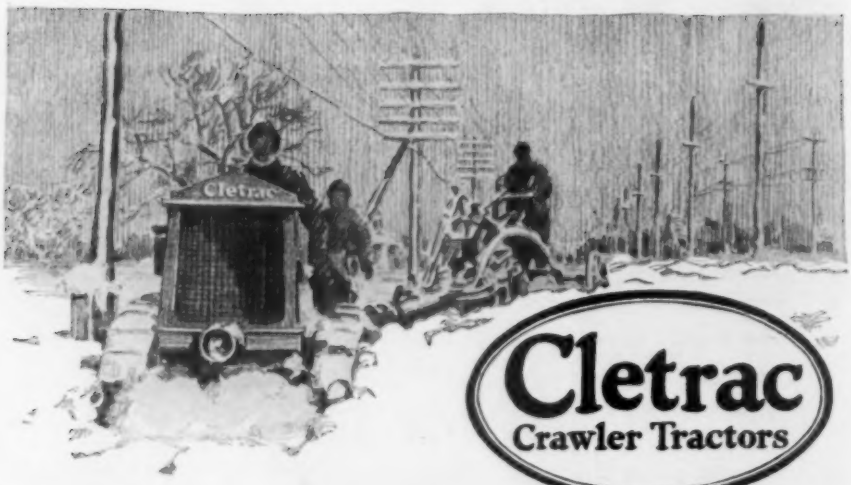
NEW JERSEY.—*Paffendorf v. Lyndhurst Township,* 129 *Atlantic Reporter* 389. Where, at the time the relator applied for a permit for the erection of a garage, he had complied with the building code and his plans had been approved by the Inspector of Buildings, the municipality could not, with a view to the adoption of a zoning ordinance in the future, prohibit the Inspector from granting the application, thus putting the zoning ordinance in force before it was adopted.

NEW JERSEY.—*Reimer v. Dallas,* 129 *Atlantic Reporter* 390. An ordinance providing that no public garage can be erected within 150 feet of any dwelling-house is an unreasonable exercise of the police power. A provision that a permit may be refused if a remonstrance is signed by a majority of the freeholders residing within 500 feet of the proposed garage is invalid.

NEW JERSEY.—*Summit Porcelain Co. v. Board of Adjustment of City of Summit,* 129 *Atlantic Reporter* 819. An ordinance prohibiting the use of buildings for manufacturing, etc., where the major portion of the products is sold other than at retail, and limiting floor area to be occupied by such uses, with the object of limiting the expansion of existing industries except in certain prescribed areas, so as to protect the remaining territory of the municipality in its use for residential purposes, cannot be upheld as being in furtherance of the "general welfare" of the community under the zoning enabling act.

NEW YORK.—*Matter of St. Basil's Church v. Kerner,* 125 *Misc. Reports* 526. The owner of property in an industrial district across the street from premises in a residential district upon which the garage is being erected, is not a party aggrieved by a decision permitting such erection within the meaning of Section 18 of the zoning ordinance of the city of Utica giving an appeal from decisions of the Board of Appeals to aggrieved parties.

NEW YORK.—*Owid v. Moshaty,* 125 *Misc. Reports* 535. Plaintiffs are not entitled to an injunction *pendente lite* to restrain the defendants



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Cletrac Crawler Tractors have won an enviable reputation for snow removal work. They have cleared up roads deemed impassable. They have kept city streets open when trucks, horses and wheel tractors were hopelessly stalled.

Running lightly on its own tracks, the Cletrac exerts a pressure of only four and a half pounds per square inch. Its compact design, low hung weight and easy turning qualities make it the perfect power unit for snow removal work. It's on the job in any kind of weather—costs little to operate—and requires no "time out" for repairs.

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The Cleveland Tractor Company
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from proceeding with the erection of a commercial garage, where defendants are constructing the garage under a building permit authorized by the proper officials of the city, and there is nothing to indicate that the authorization is invalid, the construction and operation of a public garage not being in and of itself a nuisance. (Apparently there was no provision in the ordinance for an injunction by property owners aggrieved.) Where new rights or restrictions are established by law, as is the case under zoning ordinances, and the law provides the remedy, that remedy is exclusive. While there is some intimation in the reports that, on the analogy of a public nuisance, an individual showing special or peculiar injuries to himself may invoke equitable interposition, the Court in this case does not believe that such suggestions are sound. In any event, in this case there seems to be no injury to the plaintiffs or their property which does not apply to all other property within the surrounding territory.

Recent Zoning Literature

An interesting review of the relationship between zoning and the fire hazard, by Jefferson D. Grinnalds, Secretary of the Zoning Board of Appeals of Baltimore, appears in the 1925 Fire Prevention Year Book, published in Baltimore. It seems evident on general principles that proper zoning tends to prevent fire and loss by fire. Facts that seem evident are often hard to prove. The detailed facts in Mr. Grinnalds' article do substantiate this fact in Baltimore, and his article is most useful on that account.

The Municipal Bond Market

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

THE total municipal borrowings of the states and their various subdivisions for the year to October 1 aggregated $1,061,633,190. To the same date last year new municipals totaled $1,134,335,880. It is expected that the final total for the year will show a substantial reduction in the volume of new bond issues as compared with 1924.

During the month of October there were several high-grade city bond issues brought out. The prices at which these bonds sold indicate that the market has dropped well below the level of last spring. Dealers in municipal bonds report that the reduction in prices has stimulated the investment demand for bonds. Funds that accumulated through the summer are now being attracted by the better yields. The cost of borrowing to the municipality is, of course, greater. For example; Albany, N. Y., had to pay 4.19 per cent during October, whereas last June a loan was made at a net cost of 3.87 per cent. A similar comparison is noted in a recent Buffalo, N. Y., bond sale. Last July when prices were just beginning to recede, the city borrowed at 3.99 per cent. Its last loan cost 4.23 per cent. Such is the case all down the list of recent municipal borrowers.

The city of Philadelphia has recently announced its intention to offer a $15,000,000 4¼ per cent loan. This will be the largest city or state bond offering that has been made since September 21, when the same city disposed of a like amount at 4.22 per cent.

The following are a few of the representative issues brought out during the month of October:

Amount	Municipality	Maturity	Int. Rate %	Net Yield %
$545,000	Cambridge, Mass.	1926-50	4¼	4.10
1,050,000	Indianapolis, Ind., Sch. Dist.	1935-54	4	4.12
1,882,500	Albany, N. Y.	1926-65	4¼	4.19
3,000,000	Buffalo, N. Y.	1926-45	4¼	4.23
850,000	Allentown, Pa.	1930-55	4¼	4.24
859,000	Schenectady, N. Y.	1926-45	4.30	4.26
4,139,000	St. Louis, Mo.	1930-45	4¼	4.32
2,590,000	Territory of Hawaii	1955-45	4½	4.39
500,000	Muskegon, Mich., Sch. Dist.	1936-44	4½	4.40
351,000	Montclair, N. J.	1930	4½	4.43
735,000	Sacramento, Calif.	1926-63	4½	4.44
600,000	Wilmington, Del.	1944-64	4½	4.44
1,150,000	Huntington, W. Va.	1926-59	4½	4.47
500,000	State of Colorado	1941-29	5	4.48
1,000,000	Spartanburg, S. C.	1926-50	4¼	4.69
400,000	Morgantown, W. Va.	1933-49	5	4.80
367,000	Clearwater, Fla.	1955	5½	5.76

Cooperation in Tracing Criminals

TO the International Association of Chiefs of Police is due to the credit and honor of an early recognition of the urgent necessity for the establishment of a vast central storehouse of information, a library of criminal records, a collection of identification data. The official statutory existence of the Division of Identification of the Bureau of Investigation, U. S. Department of Justice, began on July 1, 1924, under an Appropriation Act by Congress which authorized and provided funds for the acquisition, maintenance, and exchange of criminal identification records with the officials of the states, cities, and other institutions. The physical consolidation of the two great collections of finger-print records, bestowed on the Division by the Identification Bureau of the International Association of Chiefs of Police and the Bureau of Criminal Identification at Leavenworth has been accomplished. This work involved reducing to the standard 8 x 8-inch size over 500,000 finger-print records and extending the classification of more than 125,000 other prints.

We had on hand, on July 14, 1925, 914,848 finger-print records, and in our files 1,051,347 alphabetical index cards. We know, of course, the necessity for card-indexing each and every alias of a criminal. We have one "gentleman of easy virtue" recorded under 144 aliases. The number of Bertillon photographs and records on hand aggregates, conservatively, 225,000. The daily receipt of finger-print records approximates the substantial figure of 500.

—From an address delivered before the 1925 Annual Convention of the International Association of Chiefs of Police, by J. Edgar Hoover, Director of the Bureau of Investigation of the U. S. Department of Justice.

Remember Last Winter and Prepare for Next

Barber-Greene Snow Loaders Reduce the High Cost of Snow

Autumn is still with us. But Winter is not far away. And Winter means snow. And snow means wastes, costs, dangers and inconveniences.

It means wholly or partially blocked streets. It means snow-bound traffic, delayed deliveries, cursing autoists. It means blocked fire apparatus and delayed doctors.

It means slow, inefficient shoveling and the resulting high removal expense. It means dollar and cents losses for the merchants and dollar and cents costs for the city.

A Barber-Greene Snow Loader can replace as many as 200 shovelers on snow loading. It can often clear more street in fifteen minutes than a shovel gang can in four hours. There are two big savings to the city and to the residents.

In addition, the Barber-Greene can be converted into an efficient bucket loader to help build your streets, or handle odd loading jobs during the summer.

That's making snow removal money help build public improvements.

Right now is a good time to start thinking about snow removal. Get started before "Old Man Winter" gets started. Why not write for our snow removal booklet and find out how other cities in the snow belt are using Barber-Greenes.

Four Barber-Greenes that help to keep the streets of Boston clear. These machines belong to the Boston Elevated Railway.

During a heavy snowfall in 1923 one of these Barber-Greenes ran 112 hours without a stop, averaging 25 7-yard truck loads of snow per hour.

It is estimated that each of the four loaders does the work of from 15 to 200 men.

BARBER-GREENE CO., 515 W. Park Ave., Aurora, Ill.

Representatives in Fifty Cities

BARBER GREENE

Portable Belt Conveyors — Self Feeding Bucket Loaders

Coal Loaders · Automatic Ditch Diggers · Coal Feeders

Building Codes Should Require Ant-proof Structures

By Thomas E. Snyder

Entomologist, United States Department of Agriculture

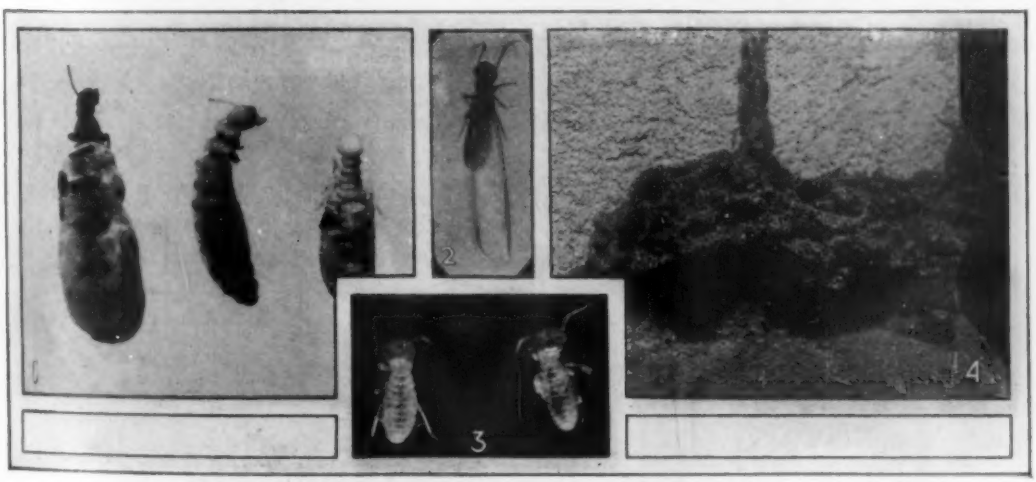
OWING to lack of information on the destructiveness of our native termites or "white ants" and their wide distribution throughout the United States, buildings are often erected with untreated woodwork directly or indirectly in contact with the ground, leaving the way open for the entrance of these insects, which travel about in the earth.

In consequence, termites come up from the ground and burrow into the wood and may greatly damage the woodwork of the building before their presence is detected. It is a great hardship for a man on a moderate salary to make a large initial outlay on a new house and, after one or two years, be forced to expend several hundred dollars additional to reconstruct the building to eliminate the termites.

The only effective permanent preventive and remedy is proper construction of the building, with the knowledge of the habits of termites and the "specific" that will eliminate them. This specific is "insulation" of all untreated woodwork from contact with the ground; it can be accomplished by the use of stone or concrete for foundations and lower flooring; or the use of foundation timbers impregnated with coal-tar creosote.

Practically all the termites which damage buildings in the United States are of subterranean habit; if they can be kept from reaching untreated woodwork from the ground they cannot survive in the building. Also, if present in a building, after all untreated wood, such as joists, wooden floors, sills, etc., has been removed from contact with the ground, they will die out, that is, dry up, even if the termites have penetrated to the height of several stories in the building. They have been cut off from their moisture supply in the ground, which is necessary for their life.

Recently the Bureau of Entomology of the U. S. Department of Agriculture has been advocating the modification of the building regulations or codes of various cities so as to include the following simple rules to prevent attack by these insects. No floors, sills, beams, clapboards, etc., of untreated wood should be laid on or in the earth, and untreated beams must not be laid in concrete without at least one inch of concrete underneath and separating it from the earth. No lime mortar should be used in foundations or in cellar walls where they are in contact with the earth, since termites are able to penetrate



THE FLYING ANTS THAT DAMAGE BUILDINGS

1. Three types of queens of our common native termite, greatly enlarged; it is useless to try to find the nest and kill the queen, since hundreds of other queens will take her place. 2. "Flying ant," or winged termite, enlarged 6 times; this form swarms in the spring or fall. 3. "Workers" of termites; these are the destructive wood-destroying forms and are seldom seen, since they remain within the wood. 4. Shelter tubes built by the soft-bodied blind native termites

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Everywhere

Hadfield-Penfield Rigid Rail Tracks take H-P One-Man Graders through all possible and many seemingly impossible places. Over mud, stones, snow, or ice, the Tracks are unbeatable. They also give the Fordson ample traction for other equipment.

With this attachment for a Fordson and one man to operate it, the less important streets of city or town can be graded, scraped and rolled. In winter it removes snow cheaper and quicker than can be done in any other way.

For parks, playgrounds, golf grounds, allotments and in contracting and construction work, the Hadfield-Penfield "One-Man" Grader will cut the time and costs of earth moving. In back filling and ditching it saves a lot.

Built of excellent material, lasts long, works faithfully.

Hadfield-Penfield Rigid Rail Tracks made a Crawler of a Fordson. Flat treads for city streets.

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lime mortar after some years' service. All brickwork extending below the surface of the ground should be faced and capped with concrete at least one inch thick. These slight modifications of the building regulations of cities by city engineers would save much property as well as time and worry to householders. It is a form of house insurance.

The recommendation of the use of heat, steam, insecticides, and fumigants against these subterranean termites is of no permanent value and is futile. If conditions in a building are unsuitable to termites they will leave; if they can be prevented from leaving or coming in again by shutting them off from the ground, nothing further need be done, and anything else, indeed, is only a waste of time and money.

Complete insulation of all untreated woodwork from the ground is the only effective method of preventing the ravages of termites in buildings in the United States. A prospective home builder should insist on obtaining this safeguard. It will pay in the end!

Municipal and Civic Publications

Prices do not include postage unless so stated

A Treatise on the Law of Public Utilities, Including Motor Vehicle Transportation.—By Oscar L. Pond, A. M., LL.B., Ph.D; member of the Illinois Bar. Third edition, revised and enlarged. The Bobbs-Merrill Company, Indianapolis, Ind. 1925. XCVIII+1065 pp. $10.00.

In the twelve years since the second edition of this work was published, the law on public utilities has greatly increased in volume and definiteness. Regulation by commission is now in force in practically all the states. The effectiveness of such control is dealt with in a chapter on Appeals from Commissions, new in this edition. Recent court decisions on the valuation of utility property for rate-making purposes and the reasonableness of rates fixed by commission, are considered. The subject of motor vehicle transportation is thoroughly treated. The closing chapter gives the state regulations, restrictions and taxes on motor vehicles.

Country Life in South China: The Sociology of Familism; Volume I—Phenix Village, Kwantung, China.—By Daniel Harrison Kulp II, Ph.D., Assistant Professor of Education, Teachers College, Columbia University; sometime Head of the Department and Professor of Sociology, Shanghai College. Bureau of Publications, Teachers College, Columbia University, New York. 1925. XXX+367 pp. Illustrated. $3.50.

Understanding the danger of generalizing about life in China, the author of this detailed study has done an admirable piece of work in analyzing one village in order to discover the trends that have a bearing upon the kind of rural life that can make a proper foundation for new national growth. The problems of rural life in China are confronting business men, missionaries, educators, agriculturalists, sociologists and others through whom China is making contacts with the rest of the world, and this study illuminates the field for such workers. It also affords material for comparison with rural community life in other countries. The full value of this kind of work can be attained only by making many such studies of individual village communities all over China—a program that would eventually furnish a complete social analysis of the country.

Social Problems of Today.—By Grove Samuel Dow, Head of Department of Sociology, University of Denver, in collaboration with Edgar B. Wesley, Head of Social Science Department, University City (Mo.) High School. Thomas Y. Crowell Company, New York. 1925. XVI + 337 pp. Illustrated. $2.00.

This is a text-book for preparatory schools, and is based upon Professor Dow's book, "Society and Its Problems," which is designed for college use. The present volume aims to present to the student life as he finds it—first, the problems caused by the natural evolution of society, such as immigration, and the movement of population to the city, and second, the problems of maladjustment, such as crime and poverty. The material is given with a warmth of human interest and with illustrations that really help in the interpretation of the problems. The author hangs up no false light in dark places, but by means of a long look backwards shows the progress that the world has made, and maintains that continuous struggle and effort will lead to still greater service of humanity.

Public Utilities and the Law.—By William M. Wherry, Jr., of the New York Bar. The Writers Publishing Company, Inc., New York. 1925. XI+337 pp. $3.00.

The author has drafted a model utility law which, with some modification, is a statute in a number of states. It is given in this book. His experience as counsel in cases where public utility law has been judicially interpreted has fitted him to address himself not only to members of the bar and to the officials of utility companies, but to those whose savings are invested in the stock of such companies. In this volume he makes clear the relationship which he believes should equitably exist between the government, the public, and private enterprise in the utility field. The practical problems of service and of rate-making are analyzed, and are illustrated by actual situations and cases. Eight states have made provision by statutes for the revocable franchise, the principles of which are discussed in the chapter entitled "The Indeterminate Permit," which gives the author's personal experience with the difficulties caused by a short-term gas and electric franchise. "The indeterminate permit in actuality relieves the public utility manager from any necessity of engaging in politics."

American City Government.—By William Anderson, Ph.D., Professor of Political Science, and Director of the Bureau for Research in Government, University of Minnesota. Henry Holt and Company, New York. 1925. IX+675 pp. $5.00.

This is a volume in the American Political Science Series, edited by Edward S. Corwin, Professor of Jurisprudence in Princeton University, and is planned for use as a college text-book. It presents the principles and processes of municipal government, rather than an array of fact details, and shows also the social and economic forces which influence city life and development. There is an enlivening quality that accompanies the clarity of this serious study and makes it good reading. One comprehends the structure of municipal government mainly through learning how it works. "Whatever matter is chosen by way of illustrations, the important thing is to keep in mind that government is a process, not a mere piece of machinery. The process begins with men and women, it is carried on by men and women, and it operates upon the problems of men and women. . . . It is a process which never ends."

The Visiting Teacher in Rochester.—Report of a Study by Mabel Brown Ellis, Assistant Director, Joint Committee on Methods of Preventing Delinquency. Published by the Joint Committee on Methods of Preventing Delinquency, New York. 1925. 205 pp. 75 cents.

Rochester is the only city in the United States in which there is a special department of visiting teachers organized under the board of education. For this and other reasons it was selected for study under the auspices of the Commonwealth Fund Program for the Prevention of Delinquency, to demonstrate the value of the visiting teacher to children who need special help. The motto of the visiting teacher seems to be "But I haven't given up." Patience, sympathy, understanding, intelligent treatment, firmness—all are shown to be essentials in the handling of the maladjustments of school children, as described in this intensely interesting report.

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TRINIDAD LAKE ASPHALT

Personal and Community Health.—By Clair Elsmere Turner, Associate Professor of Biology and Public Health in the Massachusetts Institute of Technology; Associate Professor of Hygiene in the Tufts College Medical and Dental Schools. The C. V. Mosby Company, St. Louis, Mo. 1925. 426 pp. Illustrated. $2.50.

A text-book for university, college or professional school. A number of chapters are given to the health of the individual, these of course forming a basis for the discussion of disease prevention, communicable diseases, immunity, and food control. There are chapters on water-supply, waste disposal, public health administration, school hygiene, industrial hygiene, ventilation, heating and lighting. Throughout the book it is made evident that personal health is dependent not only upon personal attention to the care of the body but upon environment and conditions for which the community is responsible.

New York—The World's Metropolis.—Commemorative Edition of the New York City Directory, edited by William Thompson Bonner. Published by R. L. Polk & Co., Inc., New York. 1924. XVI+951 pp. $30.00.

An elaborate presentation of the Greater City at the beginning of its second quarter-century of amalgamated government and the 300th anniversary of its founding, with a review of the interim accomplishments of its citizens. The material is given under these divisions: The Metropolis; Welfare and Professions; Real Estate and Construction; Wealth and Finance; Manufacturers and Manufacturing; Merchandise and Merchandising; Transportation. A complete index is included. A most interesting and valuable reference book.

Funds and Friends.—By Tolman Lee. The Womans Press, N. Y. 138 pp. $1.50.

This is a book of instruction for volunteer salesmen—those who help to raise the money for organizations that better the community and the nation. All those who are interested in private gifts for public purposes will find the little volume of value. It concerns those who seek to secure funds for hospitals, health centers, community houses, and all other institutions that depent upon the financial support of part of the people in order to benefit all of them. It does not present the technique of professionalized money-raising, but it does help the quiet, friendly worker to convince himself of the value of his cause and to present it in a way that will make others glad to help support it.

Our Police Guardians.—Compiled and written by Officer "787," John J. Hickey, Retired, N. Y. Police Department. Published by the author, 163 East 24th Street, New York, N. Y. 1925. XXII+250 pp. Illustrated. $3.00.

In breezy, intimate fashion an old New York policeman gives the history of the Department and an account of his travels in Europe and America. He publishes facsimiles of a number of letters from distinguished persons expressing appreciation of communications from him. The reminiscences of people and conditions are enlivening and are of interest to all those who wish to be informed concerning the development of the New York Police Department and the deeds of the men on the force.

Thames Valley Regional Planning Scheme.—Final Report of the Thames Valley Joint Town Planning Committee, by Thomas Adams and Longstreth Thompson, Town Planning Consultants, 121, Queen Victoria Street, London, S. W. 1, London, England. July, 1925. 52 quarto pp. Views, diagrams, folding map in pocket. The examples of congested thoroughfares and overcrowded housing conditions in the Thames Valley region are serious from the point of view of preventing their extension. This report shows the main transport routes to be provided and improved; the zoning proposals; the provisions regarding density and building lines and heights; desirable open spaces; appropriate sites for civic centers; and places especially suitable for shopping centers. (Apply to the consultants at the address given above.)

Receipts and Expenditures of the City Government of Kansas City, 1913-1923.—Report, published August, 1925, by the Kansas City Public Service Institute, dealing with the city government only, not with the county government or the schools. 72 mimeographed pp. Charts, tables. This statement of what has been spent for public improvements in recent years may serve as a partial indication of what can be done during the next few years. (Apply to Walter Matschek, Director of the Institute.)

Distinctive Denver.—The Romance of an American Capital. Published by the Denver Chamber of Commerce, Denver, Colo. 1925. Handy size. 64 pp. Illustrated. An attractive and interesting account of the development of the city since 1859. (Apply to the Chamber.)

Reforesters of America.—Prepared by Mabel L. Mills. Published by the American Reforestation Association, 428 Bradbury Building, Los Angeles, Calif. 1925. 118 quarto pp. Illustrated. $2.00.

This book presents a plan by which every man, woman and child can have a part in reforesting our country—active membership in the American Reforestation Association. This is a citizens' organization which has for its object "the saving of America's greatest asset—trees." Those who are sponsoring the organization and actively working toward its object are introduced in this most attractive volume, and the trees themselves are made to plead their cause in poems, prose, and pictures.

A City Planning Primer.—By G. E. Lommel, Associate Professor of Topographical Engineering, School of Civil Engineering, Purdue University, and Frank G. Bates, Professor of Political Science, Indiana University. Bulletin No. 11 of the Engineering Extension Service, Purdue University, Lafayette, Ind. July, 1925. 31 pp. Illustrated. This pamphlet has been prepared by a publicity committee of the Indiana City Planning Association to deal with the elements of city planning which are directly applicable to Indiana conditions, and to serve as an aid in the civics courses in the high schools of the state. (Apply to the Engineering Extension Service.)

The Socialized School—The School Grounds and Their Equipment.—Prepared and copyrighted, 1925, by Henry S. Curtis, Ph.D., Missouri State Director of Hygiene and Physical Education. For free distribution or publication in the state of Missouri. 36 pp. Illustrated. Instructions for preparing the school site and beautifying it, for making proper playground surfaces, and for planning and securing proper arrangements and equipment for the pupils' physical education and recreation. Including illustrated statements of offers of standard playground equipment from several manufacturers of such apparatus. (Apply to Chas. A. Lee, State Superintendent of Public Schools, Jefferson City, Mo.)

The Welfare Council of New York City.—A report by W. Frank Persons to the Coordination Committee, New York City. August, 1925. 104 pp. A most interesting detailed explanation of the objectives of the Welfare Council and its plan and periods of organization, also of the method of financial support. A handbook of reference on the subject of promoting more effective cooperation among the various charitable and social welfare agencies of the city. William Hodson of the Russell Sage Foundation has been appointed Executive Director of the Welfare Council. (Apply to the Council, 100 Gold Street, New York, N. Y.)

Financial Statistics of States, 1923.—Annual Report of the Bureau of the Census on Financial Statistics of States, showing the financial transactions of the 48 states for the year 1923, the assessed valuation of taxable property in those states and the taxes levied thereon during that year, and their indebtedness and specified assets at the close of that year. The financial transactions show, both for the whole state and for its important departments, the revenue collected, the cost of conducting state business, and the indebtedness incurred for meeting this cost. 147 pp. Charts, tables. 20 cents. (Apply to Government Printing Office, Washington, D. C.)

Housing in Philadelphia.—By Bernard J. Newman. Published by the Philadelphia Housing Association, 311 South Juniper Street, Philadelphia, Pa., covering the year 1924. 55 pp. Illustrated. A detailed and careful study. The situation is stated to be: a phenomenal dwelling construction and reconstruction program, a ten per cent reduction in the housing shortage for the four-year period, but practically no change for the better in the situation of the small-wage earners who comprise the bulk of Philadelphia's population, again emphasizing the fact that the new low-cost dwelling construction is a vital need. (Apply to the Association.)

The Cause and Correction of Red Water Troubles.—By Thorndike Saville, Professor of Hydraulic and Sanitary Engineering, University of Carolina. Reprint from the Proceedings of the North Carolina Section of the American Water Works Association, Volume 11, 1925. 35 pp. A non-technical discussion that presents practical remedies. A bibliography on the subject is included. (Apply to the author.)

Municipal Government and Activities of the City of Milwaukee for 1924.—Report of the Common Council of the Activities of the City Departments, Boards and Commissions. Compiled and edited by Frederick N. MacMillin, Municipal Reference Librarian. January 19, 1925. 107 quarto pp. Illustrated. An elaborate consolidated report, presenting much interesting material. (Apply to the Municipal Reference Library.)

For

CONCRETE CURING

CALCIUM CHLORIDE

THE OLD laborious and expensive method of curing concrete by ponding or by blanketing with dirt and straw and sprinkling with water is entirely done away with by the up-to-date Calcium Chloride method of concrete curing.

Solvay flaked Calcium Chloride is applied direct to the bare concrete, and requires no further attention, no sprinkling, no dirt, no straw. Roads are ready for service in as little as 10 days' time. Ordinary laborers with hand shovels do the work quickly and efficiently.

The proper amount of moisture is automatically and chemically maintained and this relieves the engineer of the responsibility of inspecting for proper sprinkling each day; the contractor also is benefited because results are certain, quick O. K'ing of the road is assured and his money comes in so much sooner. The Solvay method is the right way for all; saves time, money, labor,—gives the community its road sooner and assures long wearing concrete.

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Comprehensive City Plan, Sarasota, Fla.—Report by John Nolen, city planner, and his associate, Philip W. Foster, Harvard Square, Cambridge, Mass., based on the Planning Survey and Existing Conditions Map previously prepared and submitted. The phenomenal growth of Sarasota began in 1923 and was well under way early in 1924. This report has been accepted, 1925, by the city government, and is serving as a guide for the building of the city and for meeting its problems of zoning, traffic, recreation, etc. 24 quarto pp. Maps, views. (Apply to Harry Sawyer, Chairman, City Planning Commission, Sarasota, Fla.)

City Plan of the City of Springfield, Ill.—As prepared by Myron Howard West and staff of the American Park Builders, under the direction and approval of the Springfield Zoning and Plan Commission. Adopted by the City Council and made the Official City Plan, 1924. Published 1925. An elaborate report of 95 pp. with plans, drawings, views. Covering the proposed impounding lake, and the following divisions of the study: zoning, general street system, railroads, street-car lines, parks, school sites, boulevards, the state building group, and the proposed municipal group around the Lincoln home. (Apply to A. L. Bowen, Chairman, Zoning and Plan Commission.)

The Cleaning of Public Buildings.—Prepared for the Department of Parks and Public Property, Newark, N. J., by the Committee on Public Works of the Chamber of Commerce of the City of Newark, N. J. July, 1925. 6 mimeographed pp. Following up the recommendations of the Chamber Budget Statement made in January, 1925, reiterating the specific recommendation as to savings that could be made in this work, and emphasizing its soundness by detailed facts. (Apply to the Committee.)

City Planning—What It Really Is.—By L. D. Tilton, St. Louis, Mo. A paper presented at the annual meeting of the Iowa Engineering Society, held at Des Moines January 28, 1925. 8 pp. Illustrated. "This paper is to show briefly that there is merit and profit in a courageous city planning program, even if it does propose a few expenditures that might be termed extraordinary." (Apply to Iowa Engineering Society, Ames, Iowa.)

Central Mercantile Association, New York City.—Annual Report, 1924-1925. 52 pp. Illustrated. Giving accounts of the larger projects sponsored and improvements secured by the Association during this thirteenth year of its work. The extension of Sixth Avenue is considered the most important of these improvements. (Apply to the Association, 111 Fifth Avenue, New York, N. Y.)

Legal Provisions for Rural High Schools.—By William R. Hood, Assistant Specialist in School Legislation, U. S. Bureau of Education. Bulletin, 1924, No. 40, of the U. S. Bureau of Education. 60 pp. Tables. Showing mainly what kind of school corporation may establish a high school; the nature of the body having administrative control; what kinds of high schools may be established; and what means of support are provided in the law. Including a summary of state laws relating to tuition, transfers, and transportation. 10 cents. (Apply to Government Printing Office, Washington, D. C.)

Educational Opportunities of Greater Boston.—Day and evening courses for working men and women. Catalog No. 3 (1925-1926), compiled by the Prospect Union Educational Exchange, conducted by the Prospect Union Association of Cambridge, 760 Massachusetts Avenue, Cambridge, Mass. 147 pp. A selected list, prepared from personal interviews and from the catalogs and reports of 141 schools. James Ford is the President of the Association. Single copies free to persons who need them; quantities at the cost of printing—20 cents each. (Apply to the Exchange.)

The House That Health Built.—A report of the first three years' work of the East Harlem Health Center, 345 East 116th Street, New York City, September 1, 1921, to August 31, 1924. Prepared under the direction of Kenneth D. Widdemer, Executive Officer. 98 pp. Illustrated. The Center is an experiment in coordinating health and family welfare work in a defined city area, undertaken by the Department of Health of the city and 22 cooperating agencies, under the auspices of the American Red Cross. (Apply to the Executive Officer.)

California Tax Digest.—Volume I, Number 8, of a bulletin published monthly in the interest of the taxpayers by the California Taxation Improvement Association, 641 Pacific Mutual Building, Los Angeles, Calif. October, 1925. 32 pp. Illustrated. The Association is a non-political organization of 3,000 members. The membership fee of $1.00 includes a subscription for the bulletin, which has been established to give a complete digest of the tax laws of California, and accurate information, so that the people will be able to vote intelligently on tax matters. Single copies, 10 cents. (Apply to the Association.)

Municipal Reports

CHICAGO, ILL.—Annual Report, Controller, 1924
HAVERHILL, MASS.—Annual Report, City Marshal, 1924
SAINT LOUIS, MO.—Annual Report, Division of Parks and Recreation, Department of Public Welfare, year ended April, 1925

On the Calendar of Conventions

NOVEMBER 5-6.—KINGSTON, ONT.
Ontario Associated Boards of Trade and Chambers of Commerce. Annual meeting. Secretary, T. Marshall, Royal Bank Building, Toronto, Ont.
NOVEMBER 7-14.—JACKSON, MISS.
American Prison Association. Annual Congress. General Secretary, E. R. Cass, 135 East 15th Street, New York, N. Y.
NOVEMBER 9.—NEW ORLEANS, LA.
National Tax Association. Annual meeting. Secretary, Alfred E. Holcomb, 195 Broadway, New York, N. Y.
NOVEMBER 17-19.—GRAND RAPIDS, MICH.
International City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.
NOVEMBER 17-19.—PITTSBURGH, PA.
Joint Convention of National Municipal League, American Civic Association, Governmental Research Conference, and National Association of Civic Secretaries.
NOVEMBER 18-19.—ORLANDO, FLA.
Florida League of Municipalities. Annual meeting. Secretary-Treasurer, E. P. Owen, Jr., City Hall, Jacksonville, Fla.
NOVEMBER 18-21.—DETROIT, MICH.
American Association of State Highway Officials. Annual meeting. Secretary, W. C. Markham, 638 Munsey Building, Washington, D. C.
NOVEMBER 19-20.—DECATUR, ILL.
Illinois Municipal League. Annual convention. Acting Secretary, Marjorie Dickinson, Urbana, Ill.
NOVEMBER 19-21.—OKLAHOMA CITY, OKLA.
Oklahoma Municipal League. Annual convention. Secretary, Dr. Harry A. Barth, University of Oklahoma, Norman, Okla.
NOVEMBER 23-26.—MIAMI, FLA.
Atlantic Deeper Waterways Association. Annual convention. Secretary-Treasurer, Wilfred H. Schoff, 1405 Widener Building, Philadelphia, Pa.
NOVEMBER 30-DECEMBER 3.—NEW YORK, N. Y.
American Society of Mechanical Engineers. Annual meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York, N. Y.
DECEMBER 1-6.—SEATTLE, WASH.
Washington Association of Commercial Organization Secretaries. Annual meeting. Secretary, F. W. Mathias, Hoquiam, Wash.
DECEMBER 2-5.—CINCINNATI, OHIO
American Institute of Chemical Engineers. Annual meeting. Secretary, John C. Olsen, Polytechnic Institute, Brooklyn, N. Y.
DECEMBER 10.—NEW YORK, N. Y.
American Engineering Standards Committee. Annual meeting. Secretary, P. G. Agnew, 29 West 39th Street, New York, N. Y.
DECEMBER 28-31.—NEW YORK, N. Y.
National Community Center Association. Annual meeting. Secretary, LeRoy E. Bowman, 503 Kent Hall, Columbia University, New York, N. Y.
JANUARY 8-9.—SALEM, MASS.
New England Association of Commercial Executives. Secretary, Earl J. Arnold, Chamber of Commerce, Bristol, Conn.
JANUARY 11-15.—CHICAGO, ILL.
American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, 37 West 39th Street, New York, N. Y.
JANUARY 20-22.—NEW YORK, N. Y.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York, N. Y.

Prosperity travels on good roads

NOWADAYS, Prosperity rides in an automobile. She is willing to come to any community that will make her welcome. But like all other motorists, she doesn't like to travel over rough, dusty or muddy roads.

Very often she rides in with the tourists, bringing her favors to the retail merchants, who pass them on to the rest of the community. Sometimes she chooses to ride in a motor truck. But she always chooses the good roads.

Some communities have failed to prepare the road for Prosperity because of a mistaken idea that it would require a large expenditure of money. If this is the case in your town or county, you should investigate the cost of treating your dirt, gravel or stone roads with Standard Asphalt Road Oil. Roads that have been properly graded and treated with Standard Asphalt Road Oil are smooth, dry and dustless. They are economical to maintain and pleasant to travel upon. They will attract tourists to your community — and Prosperity follows the tourists.

The engineers of our asphalt department will be glad to study your road problems and make their recommendations for improving your roads with Standard Asphalt Road Oil or Stanolind Paving Asphalt. This service is free.

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

New Contact Flasher for Electric Warning Signals

A new type of mercury contact flasher designed for lighting devices for warning and controlling motor traffic is now being made by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Various control mechanisms for producing the flashing effect have been employed, and the mercury contact type is one of the simplest, most positive and durable.

The mercury flasher consists essentially of a vacuum tube of special shape enclosing a steel plunger and a quantity of mercury. The tube is made up of a vertical section which contains the plunger and an inverted U section connected by a short horizontal section. Contacts are placed at either side of the U section in such positions that when the tube is filled with mercury an electrical circuit is established between them. Mercury is

FLASHER FOR TRAFFIC SIGNALS

free to flow through the horizontal section. The plunger is operated by a solenoid coil to change the level of the mercury which opens and closes the circuit between the two contacts.

When connected in an electrical circuit, the current flows through the operating coil and lamp. The current in the solenoid lifts the plunger, causing a difference in level of mercury between the two sections of the tube. The mercury rises in the vertical section and falls in the U section, breaking the connection between the two contacts. This breaks the circuit through the lamp and operating coil and allows the plunger to fall. The plunger, floating on the mercury in the vertical section, causes the mercury to rise in the U section and the contact is re-established, completing the cycle.

Two types have been designed, one for multiple and one for series connections. The multiple type is designed for 110 volts alternating current, and the series type for 6.6 amperes alternating current. Either can be used to control any size standard lamp.

The flasher is enclosed in a metal case and may be mounted either in the base or in the casing of ornamental standards, or mounted on wood poles and used for overhead fixtures. By rearranging the connection, the flasher can be used as a relay for the control of street-lighting circuits. The contacts are capable of breaking 30 amperes continually. Tubes on life test have broken a 5-ampere circuit over 18,000,000 times.

Chicago Incinerator Contract Awarded

The Rust Engineering Company, Pittsburgh, Pa., has been awarded a contract by the city of Chicago to build an incinerator of the Balmer type, designed by the Balmer Corporation, 150 Nassau Street, New York City. The plant will have a rated capacity of 100 tons of garbage and rubbish in 24 hours, and will be ready for operation in the spring of 1926.

New Aluminum Paint for City Use

An aluminum graphite paint to meet the special requirements of exposed metal work at all places where an aluminum or light-colored paint is required, has been announced by the Joseph Dixon Crucible Company, Jersey City, N. J. This new paint is composed of aluminum combined with a flake silica graphite pigment and boiled linseed oil. Aluminum when used for paint making is of flake formation, and when combined with the Dixon pigment, each flake laps over after the manner of fish-scales, forming a covering of great elasticity and durability.

The luster of this paint is slightly less than that of a straight aluminum paint, but is said to be pleasing to the eye. Gases, fumes, acids, smoke, and other deteriorating agents have little effect on this paint, which will retain its color after light-colored paints have darkened, according to the manufacturers. It has a resistance to the natural enemies of paint—sunlight, air, and moisture. It reflects light and heat, which will make it an industrial paint of considerable value. It stains less from soot, dust, water, etc. It can be sprayed or brushed on, but the latter method is recommended. It can be brushed on over a dark coat of paint, one coat being sufficient to properly cover the under surface.

New Minneapolis Representative

The Paradon Engineering Company, 24 South Washington Place, Long Island City, N. Y., has announced the appointment of E. L. Sandberg as its representative for the sale of Paradon chlorinators in the states of Minnesota, South Dakota, and North Dakota. Mr. Sandberg is located at 718 Metropolitan Life Building, Minneapolis, Minn.

Do You Scrap Your Car When the Tires Wear Out?

THIS procedure would be about as logical as tearing up a solid road or street because the surface is rough.

Many cities, counties and states have learned that they can double the life of their old pavements by re-surfacing with Kyrock.

The saving amounts to the cost of excavation and building a new base. The cost of Kyrock re-surfacing, usually, is less than half that of new construction.

Kyrock re-surfacing is not an experiment. Miles of re-surfaced macadam, gravel, brick, asphalt and concrete pavements are giving eminent satisfaction under heavy traffic.

Kyrock surfaces do not shove, roll, buckle or bleed. They are smooth, noiseless, dustless and resilient. Write for Brochure A.C.

KENTUCKY ROCK Kyrock ASPHALT

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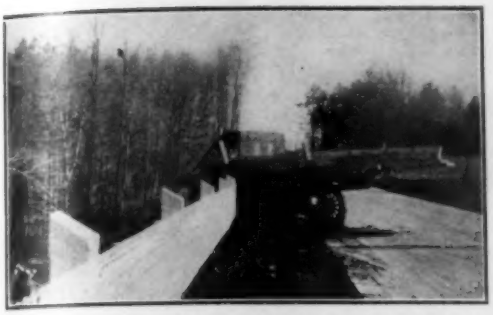


WOVEN-WIRE GUARD FENCE PREVENTED A BAD ACCIDENT ON THIS ROAD

Safety Fencing Prevents Bad Accident

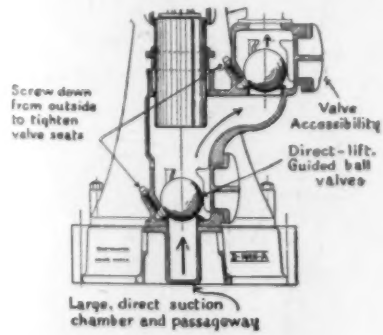
Interesting data on the protection provided by wire link fence used for highway guard purposes, are supplied by J. D. Pridgen, District Highway Engineer for the North Carolina Highway Commission, in a report on a recent action to a heavily laden truck on State Route No. 10 between Salisbury and Statesville, N. C.

The truck, loaded with timber, was traveling at a rapid rate of speed down a grade when a piece of lumber slipped off and caught in the front wheel, breaking the wheel and steering gear and causing the truck to go out of control and dash toward the ditch.

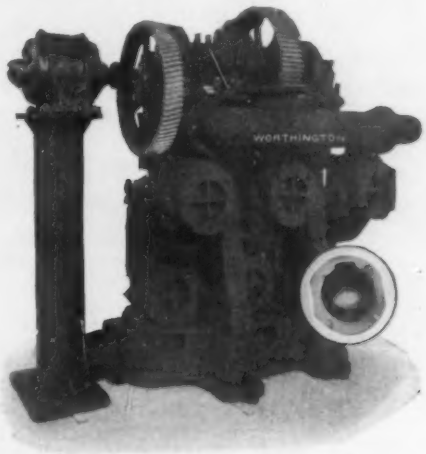
Previous to the accident, fortunately, the Highway Commission had installed several hundred feet of Page Hi-Way Guard, sold through the Page Fence & Wire Products Association, 215 North Michigan Avenue, Chicago, Ill., on both sides of the road as a protection to the deep ditch on either side. The careening truck struck the Hi-Way Guard, causing it to stretch considerably before the force of the impact could be absorbed and the truck stopped. Neither the driver nor his helper were injured. The only damage to the truck was that caused by the piece of lumber. After the accident, the distorted length of fence was removed and a new length spliced in.

Pumps for Activated Sludge

The activated sludge process of sewage treatment, the use of which is increasing rapidly, especially in the lake regions, because of the high degree of purification attained, requires special pumps for the removal of the sludge. For this service the Worthington Pump & Machinery Corporation, 115 Broadway, New York City, has supplied a number of vertical triplex sludge pumps of the ball valve type, built at the Deane Works, Holyoke, Mass. The plungers, valves, and valve-seats of this type of pump are of bronze, and the plunger glands and throat are bronze-lined to enable the pumps to withstand the corrosive action of the sludge. The diagram showing the section through the cylinder shows the straight flow and the unusually large valve area which has been provided in these pumps and which has contributed much to their dependability and service. The other illustration shows a Worthington 12 x 12-inch vertical triplex sludge pump recently furnished for an Ohio sewage treatment plant. The pump is fitted with double gear reduction and an elevated motor.


Screw down from outside to tighten valve seats
Valve Accessibility
Direct-lift, Guided ball valves
Large, direct suction chamber and passageway

SECTION OF SLUDGE PUMP



THE NEW WORTHINGTON SLUDGE PUMP

A Heavy-Duty Tractor Plow

Efforts to clear the roads of snow so as to make motor traffic possible during the entire winter season are being made on all sides. Individuals, manufacturers of snow-plows, trucks and tractors, the Federal Government, as well as the states and cities, are exercising every available effort because they realize that even one day of idle motor traffic over a small area means a heavy financial loss. The present development in snow-fighting equipment has shown conclusively that roads can be cleared of snow and maintained in a good passable condition for motor traffic during all the winter months.

The Linn tractor, made by the Linn Manufacturing Corporation, Morris, N. Y., has the advantage in construction of a 4-yard truck body or a straight platform body which can be loaded, thereby giving the tractor the traction which is needed at all times in pushing deep snow from the road. This machine is also equipped with an angle ice creeper, enabling it to hold a straight course under ice conditions on the highway. The snow-plow, as illustrated, is of the V-type with a square point which will lift the snow from the road, while the V-shape construction will push the snow out to either side, where it is carried by two wings out to a width of 16 to 18 feet. These wings are attached one on each side of the machine and can

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Patches on busy highways can be completed and the road opened to traffic almost overnight. Dowflake patches save their cost in watchman and lanterns alone.

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Highway officials find that Dowflake keeps down dust all summer and binds gravel road surfaces so firmly that they last twice as long.

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Dowflake is used from coast to coast for gravel road patches that bind in with the road and pack and stay.

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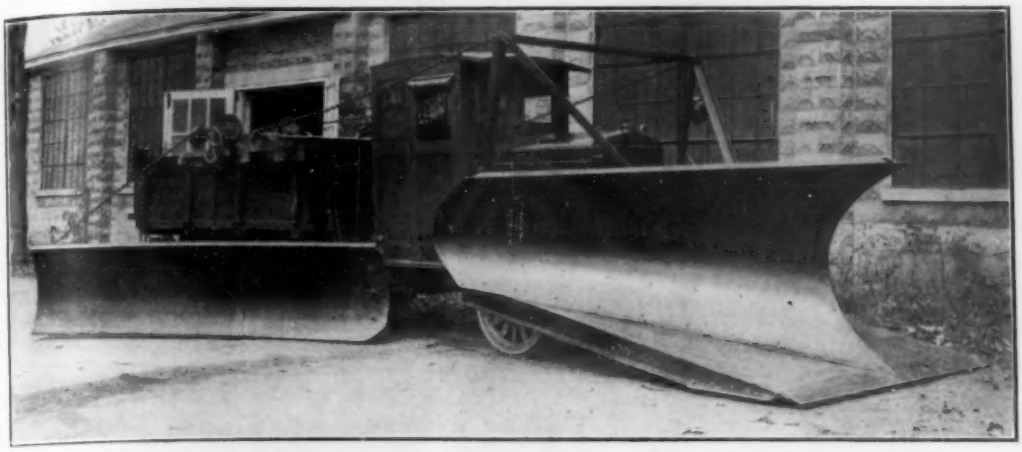


THE LINN TRACTOR, SHOWING FRONT AND WING SNOW-PLOWS

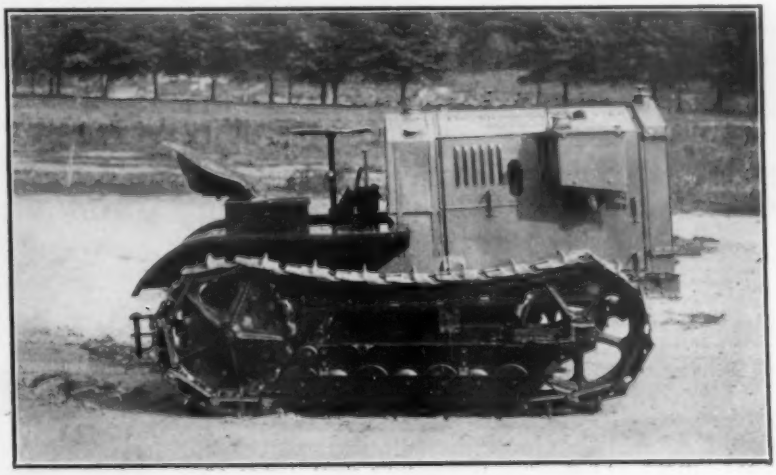
be raised or lowered as conditions require. Linn snow-fighting equipment will move at a speed of 3 to 5 miles an hour in snow of an average depth of 3 feet. It is possible to open roads where snow has blown in to a depth of 6 or 8 feet, and in many places it has worked at a much greater depth, but necessarily has taken more time, as the speed is governed by the depth and weight of the snow.

There are many townships and counties throughout New York State that are using two or more Linn tractors in road construction. During the snow-removal period a double-header, two machines coupled together and pushing one plow, is used after a heavy snowfall. This makes possible the removal of snow over a greater road mileage than could be cleared with one tractor in the same period of time. These tractors are so constructed that they may be coupled together with heavy cross-reaches, thus obtaining the combined efficiency of both units. This same method is used by railroads after heavy snows by coupling two or more steam locomotives together for pushing one plow along their tracks, thereby gaining valuable time.

A New Model Tractor

The new Model K Cletrac, made by the Cleveland Tractor Company, Cleveland, Ohio, can easily handle an 8-foot grader with a full bite and readily pull a three-bottom 14-inch plow. It is said to handle easily on any job, and its turning radius equals its own length. This new model incorporates many new principles of design and engineering which make a very interesting development in the tractor field. The use of seven closely-assembled lower track wheels eliminates any rocking motion in the tractor and insures a maximum of track gripping the ground with a corresponding increase of draw-bar pull.

This model is claimed to be the only tractor which has an instantaneous oil system. This is an innovation and one which adds many prospective hours to the tractor's working day by eliminating the time usually taken up for greasing and oiling. A simple push of the hand plunger, conveniently located in front of the driver, systematically and thoroughly oils the lower track wheels while the tractor keeps moving on the job. To further increase the life and service and to lower the upkeep, the track wheels are mounted in cast iron bearings which will not burn out and which require no adjustment.



THE NEW MODEL K CLETRAC TRACTOR

Paved with Bonds!

A street is "paved with bonds" whenever a pavement is worn out before the bonds which paid for that pavement have been retired. And it's a situation that exists in hundreds of places. The unfortunate taxpayers in such communities are saddled with a double burden.

There's an Ohio city, for instance, which has seen one of its streets repaved three times with short-lived materials, while a more important thoroughfare, carrying heavier traffic, is still paved with vitrified brick laid 35 years ago. And the latter has not yet had a cent of repair cost charge against it. *Which has been the cheaper street for the taxpayers?*

We will gladly send you an ample supply of convincing testimony on paving costs, taken from official public records, the kind of facts and figures which will help you convince your business associates, neighbors and friends of the economy of paving with vitrified brick. Simply let us know that you are interested.

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PAVE WITH VITRIFIED Brick

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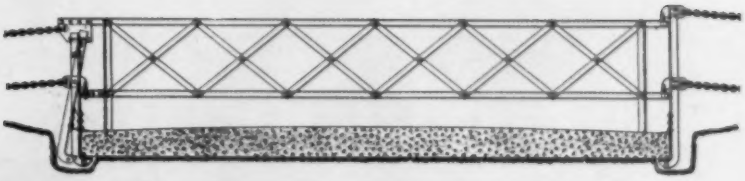

BLAW-KNOX ROAD BARRICADE SHOWN ON A SECTION OF CONCRETE ROAD

Fordson-Hyster Saves $100 a Day

By introducing the Fordson tractor and an Ersted Hyster made by the Ersted Machinery Manufacturing Company, Portland, Ore., the Bellingham City Water Department has made it possible to apply human labor to more intelligent service. Where formerly 25 men were handling shovels in backfilling several miles of sewer ditch, the tractor and Hyster are now doing the job much more economically. According to J. B. McMillan, Superintendent of the Water Department, the outfit is moving the dirt at less than 10 cents a yard and in taking the place of 25 shovelers is effecting a daily saving of approximately $100.

The auxiliary structure of the Hyster consists of two vertical channels interbraced and with fore and aft angles of sufficient length to make side stays effective. The channels are anchored at their lower end to the Hyster rear channel casting and properly braced, making the whole superstructure rigid. The 28-foot boom is pivoted at the lower end of the vertical member and is suspended by a cable at one-fifth its length from the outer end to the top of the structure.

The main-line cable is led under the underneath roll and through a side lead sheave, permitting the cable to pull the fresno scraper in at right angles to the fore and aft axis of the tractor. The scraper is retrieved by a ⅜-inch cable off the upper drum which is fairled by a sheave suspended in a forward position on the superstructure and a sheave on the end of the boom.

The long boom gives the man handling the scraper a wide range in which to work, enabling him to move 15 to 20 yards of earth at each setting. The rear wheels of the tractor are loaded with concrete to provide a counterweight against the boom.

A Road Barricade That Autoists Can't Shift

On any concrete road job there are varying stretches of finished road which must not be opened to traffic until the green concrete has thoroughly cured. Many types of makeshift and wooden barricades are in daily use, but these are not only expensive to set up and dismantle, but ineffective in protecting the road against a determined effort on the part of intruders who want to use the uncured road as a short cut, meaning certain damage to the finished pavement.

The new steel barricade made by the Blaw-Knox Company, Pittsburgh, Pa., was invented by R. A. Trufant, a highway engineer in the state of Illinois. It is permanent until deliberately removed by the person holding the key, and easily erected, and forms a positive safeguard, preventing traffic until the road is officially opened to the public. The barricade is made from riveted steel shapes and includes two standards and a gate. The standards grip the side of the road slab as shown in the illustration, and the barricade cannot be disturbed until unlocked. Side chains to prevent ingress around sides of the barricade may be added if desired, but are not part of the standard equipment. The two standards together weigh 150 pounds, and the gate for a 20-foot road weighs 280 pounds.

Moves Southwest District Office

The Paradon Engineering Company, 24 South Washington Place, Long Island City, N. Y., has announced the moving of its Southwest District office, formerly located at Oklahoma City, to 810 Atlas Building, Tulsa, Okla. Lawrence K. Cecil still retains charge of the sales and service of Paradon chlorinators in the Southwest.

ERSTED HYSTER-EQUIPPED FORDSON HANDLING BACKFILL IN BELLINGHAM, WASH.

Reco Traffic Control

A reliable control that's giving wonderful satisfaction

Twenty-five years of building flashers for outdoor use, told us many of the problems to meet in designing Reco Controls.

Traffic signal work presents many difficult problems and the control apparatus must be reliable. Reco Controls have stood the acid test and will stand such abuse as will render the average device unusable.

Reco Controls are featured by simplicity, ease of adjustability, convenience of renewals, accessibility of any part, reliability of motor.

We have a special bulletin on traffic controls that's mighty worth reading. Write for it.

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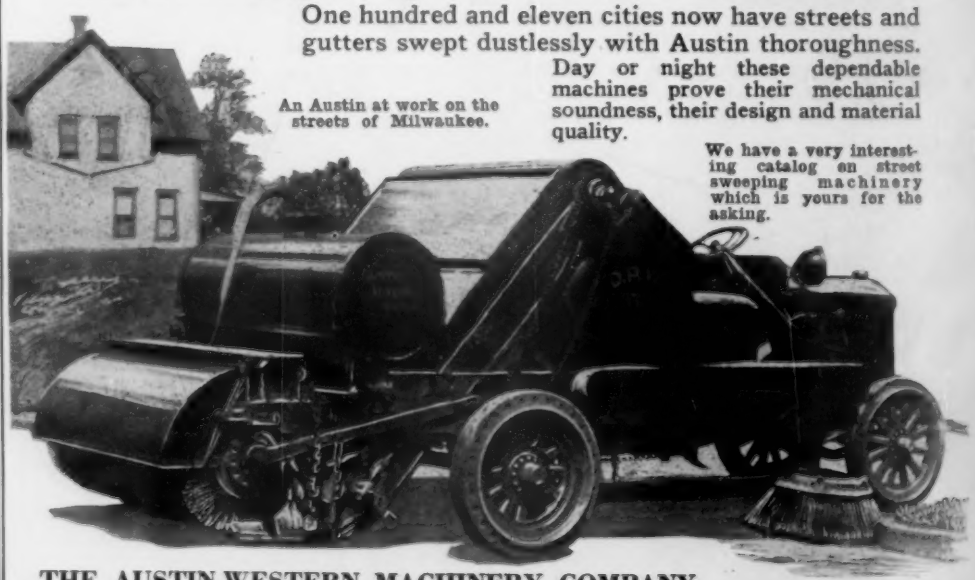
Another city enjoys AUSTIN Motor Swept "Spotless Town" cleanliness

One hundred and eleven cities now have streets and gutters swept dustlessly with Austin thoroughness. Day or night these dependable machines prove their mechanical soundness, their design and material quality.



An Austin at work on the streets of Milwaukee.

We have a very interesting catalog on street sweeping machinery which is yours for the asking.

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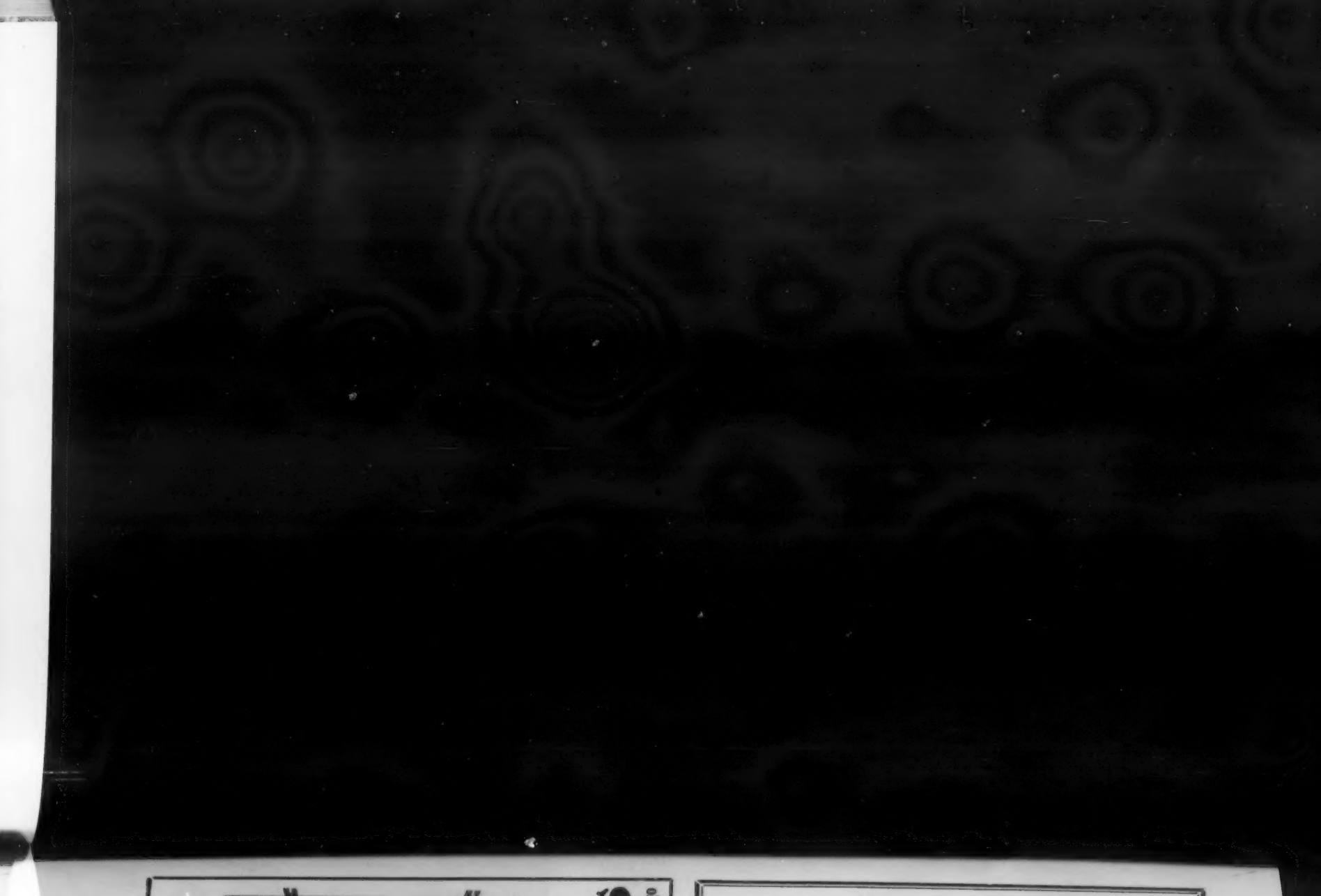
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